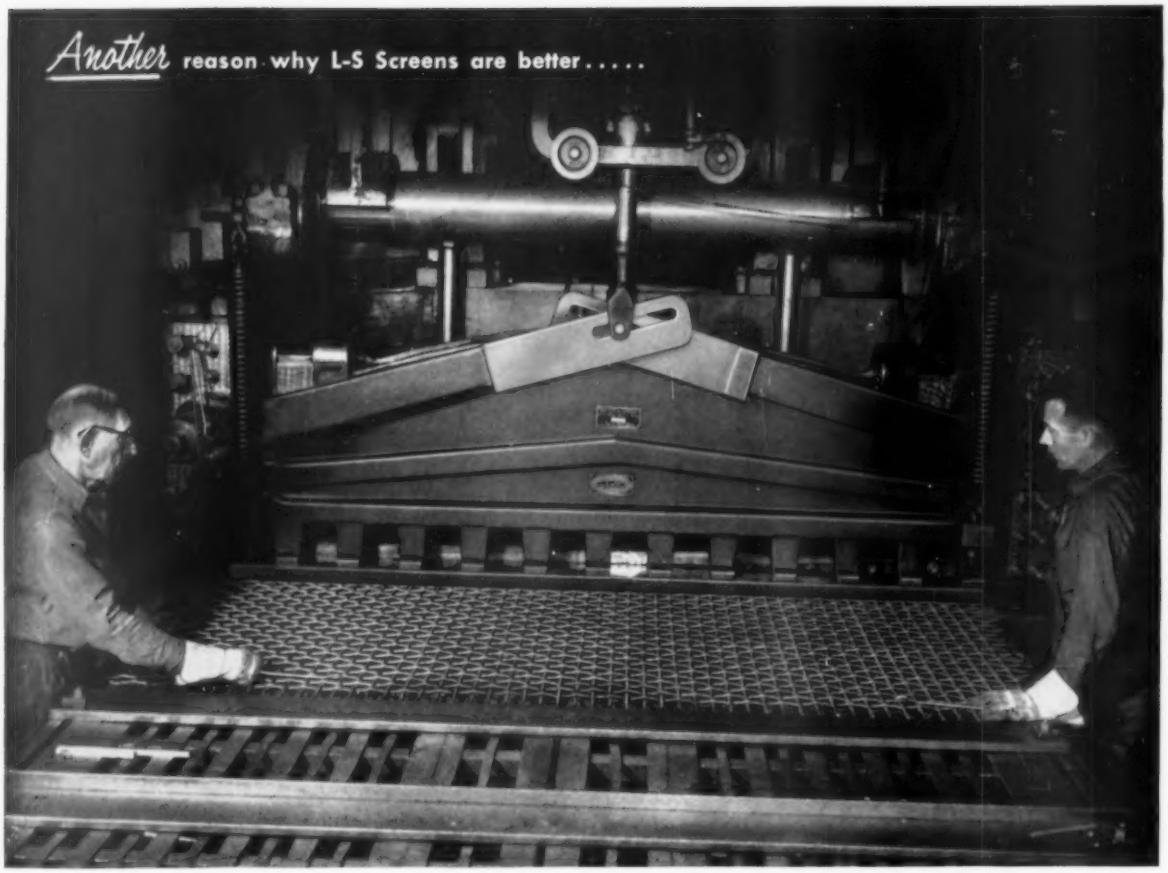
PIT and QUARRY

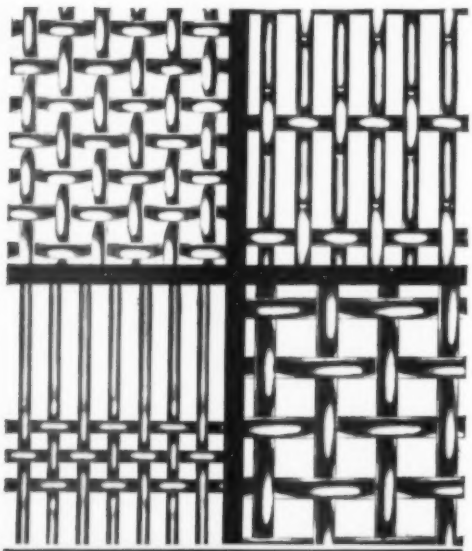
DECEMBER 1958

A Control Center at Lake Asbestos

SEE PAGE 78



LUDLOW-SAYLOR shears—does not burn—wire ends to insure accurate dimensions and to prevent distortion



Ludlow-Saylor Screens and Wire Cloth can be furnished of stainless, oil-tempered, high-carbon, monel, bronze, copper, brass, or any other wire.

Burning off uneven wire ends, after screens are woven, is common industry practice . . . but not Ludlow-Saylor! L-S Screens are trued up on a leveling machine, then are sharply sheared on all sides to insure absolute accuracy and to prevent any distortion of the precision-woven openings.

This extra 2-man operation is typical of the many reasons why L-S Screens wear longer—stand up better under toughest conditions—and retain their rigid dimensional stability far longer than ordinary screens. *Order L-S Screens next time . . . you pay no more, but get much more!*

***Immediate Shipment** of most weaves and sizes*

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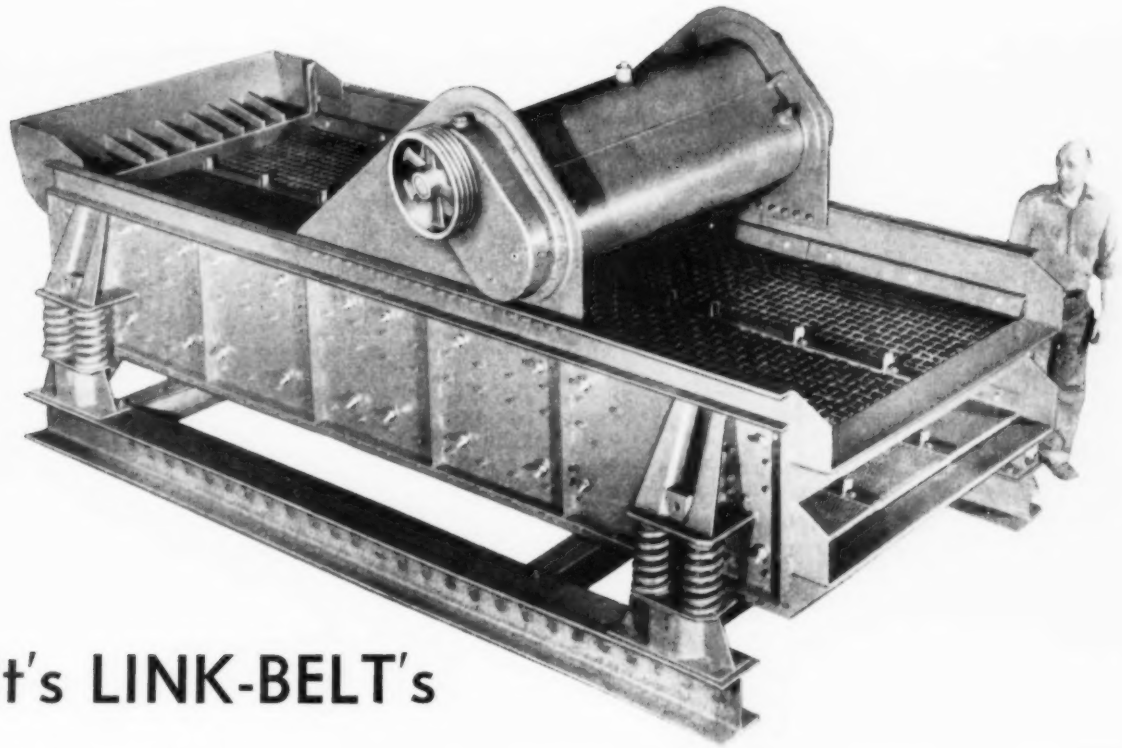
NOW . . . high-intensity action with a low-slung profile



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Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel, Slag and other nonmetallic minerals.

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To subscribers: When requesting change of address, kindly send old as well as new address.

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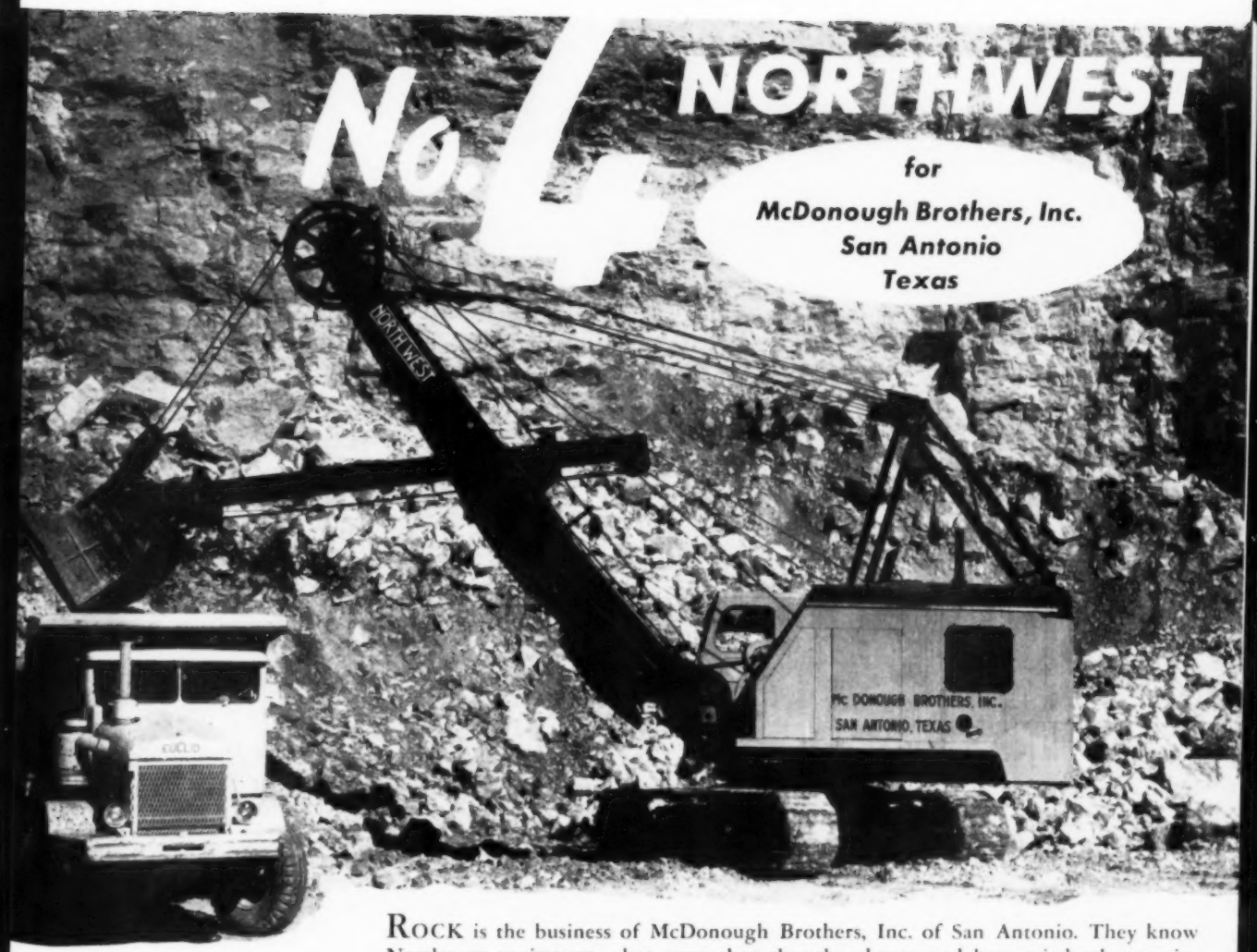

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S-80-49-5

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Another "biggest" shovel flexes its wire rope muscles

...they're Tiger Brand, of course !

The giant boom towers 147½ feet from the ground and is supported by four 3⅝-inch Tiger Brand Galvanized Boom Supports designed to resist vibration and give long service life.

Two Tiger Brand hoist ropes, 2⅝ inches in diameter, do the heavy lifting. It is estimated that about 60,000 yards of overburden is being moved per 24-hour day. Coal production is expected to be 4,000 tons daily.

Put yourself into this picture for a minute. You are holding on to a railing 103 feet up in the "crow's nest" of one of the world's three largest shovels.

Just below you, the 2⅝-inch hoist ropes whirl through sheaves as the dipper rams into the hillside. You feel the big machine shudder as it scoops up 100 tons of rock and dirt. Then you swing with the load and see it dumped 96 feet high and 100 yards away. You wonder how the wire ropes that seem so small can lift so much.

The answer to that goes back to steelmaking and wire rope engineering. These USS Tiger Brand Ropes are specially designed for big shovels. They have been used on the Mountaineer, River Queen, and Coal Chief—with outstanding success.

The huge boom is supported by four 3⅝-inch-diameter USS Tiger Brand Galvanized Boom Support Strands 105½ feet long. Each strand has a catalog strength of 768 tons, for a total strength of 3,072 tons.

Your equipment may not need such large wire rope, but the same quality of engineering that goes into these big shovel ropes is applied to all sizes of USS American Tiger Brand. For more information, write American Steel & Wire, Rockefeller Building, Cleveland 13, Ohio.

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Another 70-cu.-yd. shovel. Built by Marion Power Shovel Company for the Victoria Mine of Midland Collieries, Inc., subsidiary of Midland Electric Coal Corporation. The Victoria Mine is located near Galesburg, Ill.

Enter 6 on card, page 105

Which is the Best Screen for your job?

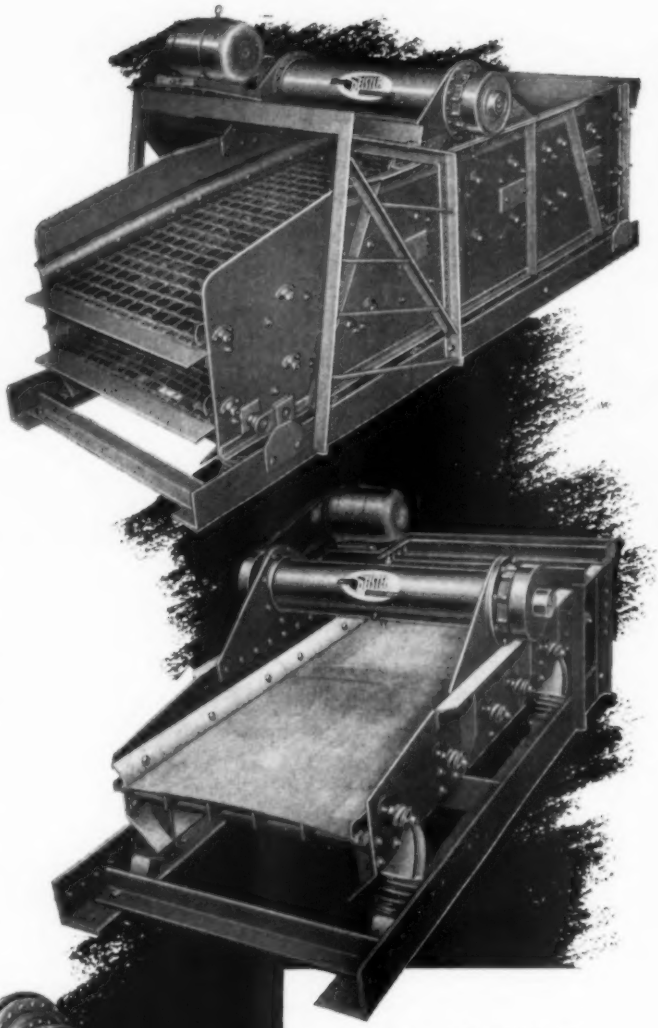
The vibrating screens you select to meet today's extremely competitive conditions must be highly specialized machines . . . designed especially to handle each of *your particular jobs*. And that's why Deister builds screens in four distinct *types* and in a complete range of *sizes*. For example:

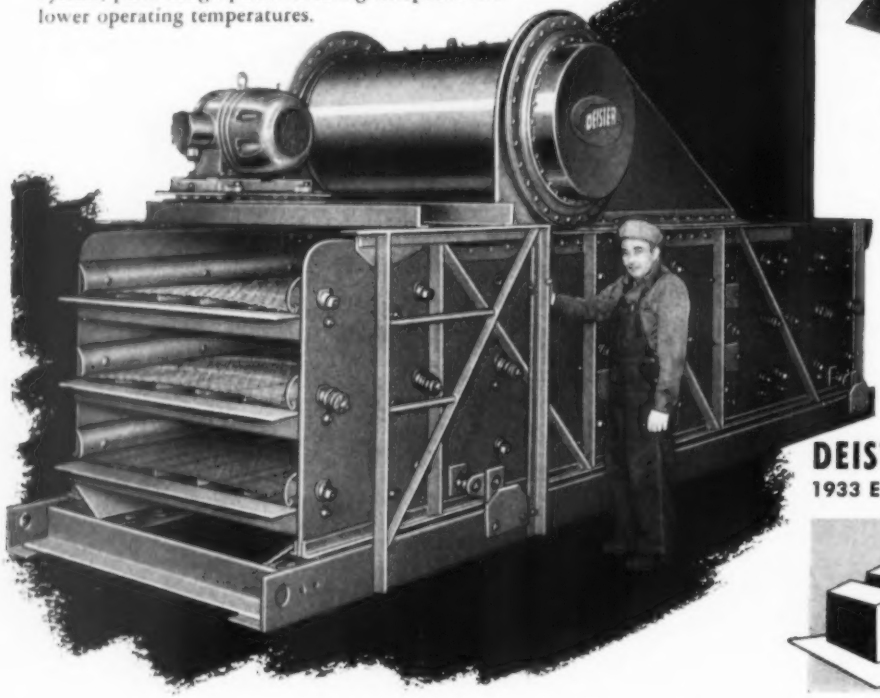
Type UHS. Deister Type UHS Screens are built in a full range of sizes to meet any heavy-duty screening job. Extra heavy-duty types are available for scalping and coarse sizing. The Deister principle of opposed elliptical throw provides maximum capacity and efficiency in sizing. With Deister's exclusive Adjustable Slope Screen Panels, the screening angle of every Type UHS may be adjusted exactly at both feed and discharge ends to meet the specific requirements of your job.

Ag-Lime. Deister Ag-Lime Screens (Type USL) are designed to screen damp, sticky material through medium and medium fine screen cloth openings. They apply intense vibration at a relatively high frequency. For unusual conditions they are available with an Electric Screen Heater and a Ball Tray Deck.

Flat Screens (Type UF). If your plant design requires flat or horizontal screens, or if you need increased tonnage but lack the head room necessary to install larger inclined screens, investigate Deister Type UF Screens. They are also unusually effective for dewatering sand, gravel and stone.

An outstanding feature of *all* Deister Vibrating Screens is Deister's Exclusive Oil Mist Lubricating System, permitting operation at higher speeds and lower operating temperatures.





Top: Type UHS Screens are available in 3', 4' and 5' widths; in 10', 12' and 14' lengths; and with single, double or triple decks.

Above: Type USL Ag-Lime Screens are built in 4' x 8' and 4' x 10' single-deck models.

Left: Type UF is built in 3', 4' and 5' widths; in 8', 10', 12', 14', 16' and 18' lengths; in single, double, triple and four-deck models.

DEISTER MACHINE CO.
1933 E. Wayne St., Ft. Wayne, Ind.

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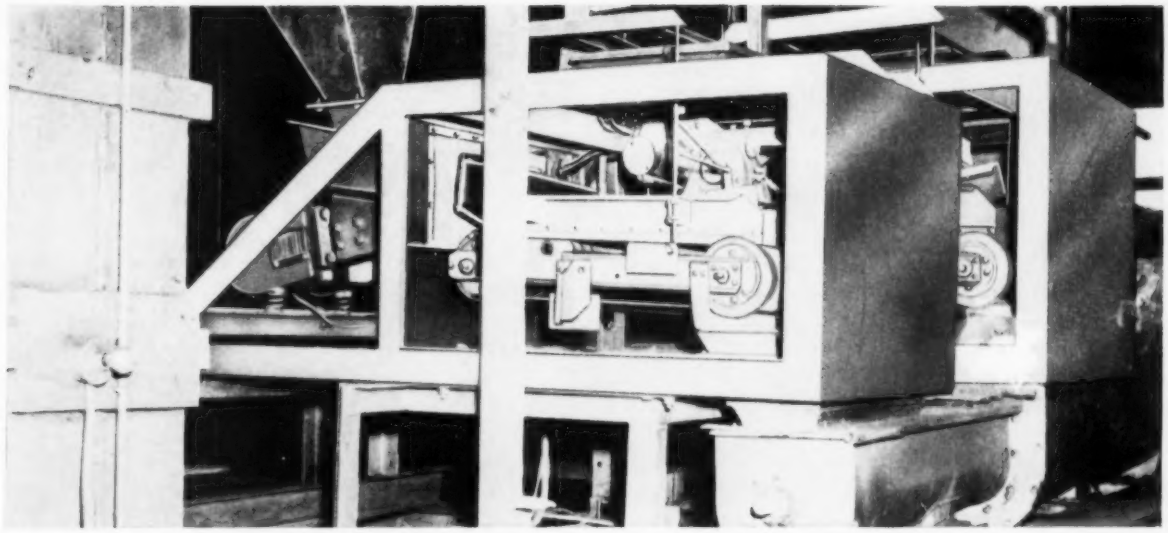

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GRAVIMETRIC FEEDERS

for automatic, continuous controlled flow feeding by weight

SYNTRON "weigh-flow" Gravimetrics are designed for the automatic, dependable, continuous flow feeding of bulk materials.

Fully automatic. Feed rate is electronically controlled by the load on a scale-suspended, constant speed conveyor belt. Any deviation from the precise, pre-determined weight adjusts the vibration of the supplying feeders to increase or decrease the feed rate to the belt.

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Simple and functional design, with a minimum of moving parts, SYNTRON Gravimetric Feeders are built for long, dependable, trouble-free service.

SYNTRON Gravimetric Feeders are available in a standard range of sizes and styles. Capacities range from pounds to 100 tons per hour.

Our application engineers will be glad to submit recommendations for your particular feeding-by-weight problem. RP658

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Keep Up With Your Industry!

MOST producers of nonmetallic minerals are now in the seasonal period of low demand in which they have time to do many things which had to be postponed during the peak operating season. Such projects include repairing and replacing equipment, installing additional productive facilities, and catching up with industry developments and progress. This is also the season when the annual industry conventions are held, at which these producers can get information on almost any current important problem. No more profitable investment can be made than attending these conventions.

The important annual conventions ahead are: The National Agricultural Limestone Institute, Hotel Statler, Washington, D. C., January 20 and 21, 1959; the National Crushed Limestone Institute, Hotel Statler, Washington, D. C., January 21 and 22; the National Crushed Stone Association, the Americana Hotel, Miami Beach, Fla., January 27 to 30; the National Sand and Gravel Association, in conjunction with the National Ready Mixed Concrete Association, Roosevelt Hotel, New Orleans, La., February 17 to 19. During this period there will also be a number of important conventions of industries closely related to the nonmetallic minerals industries or otherwise of interest to them. More information on these can be found in the Coming Events column in this issue.

THE N.A.L.I. convention in Washington will begin on Monday, January 19, with meetings of the executive committee and the board of directors. The convention sessions all day Tuesday will cover percentage depletion, agstone sales promotion, and other industry problems. Wednesday will feature a joint meeting with N.C.L.I., covering operating problems, depreciation, and conferences with equipment manufacturers. The outside attractions to be found in our nation's capital are known to all.

The N.C.S.A. convention in Miami Beach again offers everything that made the 1957 convention there so successful. Following meetings of the N.C.S.A. and Manufacturers' Division boards of directors on Monday, January 26, there will be four days of convention sessions. Subjects on the program include operating problems, sales methods, legal matters, labor relations, percentage depletion, depreciation, and other important topics. Little need be said about the unexcelled entertainment available.

The N.S.G.A.-N.R.M.C.A. combined convention in New Orleans will offer an equally important and interesting program covering subjects of vital importance to these industries. As in the past, informality and panel discussions will prevail. The two board meetings will be held on Monday, February 16. The convention sessions will be on Tuesday, Wednesday, and Thursday. This convention also offers an attractive variety of recreational activities.

THE complete official program of N.A.L.I. is published in this issue of PIT AND QUARRY, as is also a preliminary outline of the N.C.S.A. program. The complete programs of the N.C.S.A. convention and the combined N.S.G.A.-N.R.M.C.A. convention will be published in the January issue.

Every year the complications and problems confronting every businessman increase, and he is more dependent on reliable and authoritative sources of information. This is particularly true of the aggregates and related industries, which are suppliers of basic materials for almost every other major industry. Nowhere can a producer get more good information on a wide variety of subjects of vital importance than at the convention of his industry. These conventions are open to all producers and others interested.

Walter E. Trauffer

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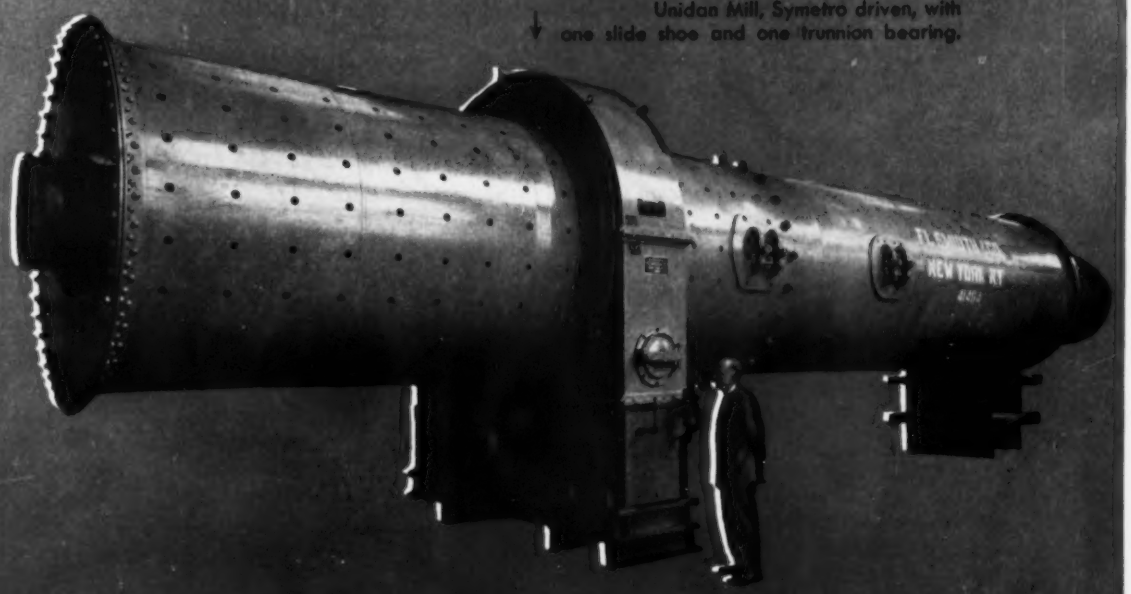
Ball Mills and multi-compartment Unidan Mills for wet and dry, open and closed circuit grinding and airswept Tirax Mills for simultaneous drying and grinding. Auxiliary equipment for mills. Special features include the Smidth slide shoe bearing and the Symetro Drive.

Unidan Mill, Symetro driven, with one slide shoe and one trunnion bearing.



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Washington News Letter

By S. HERBERT UNTERBERGER

IT IS no longer news that 62 percent of the senators, 65 percent of the congressmen, and 71 percent of the governors elected last month are Democrats. It may turn out, however, that despite this overwhelming victory, changes will be hard to achieve and slow in coming. This is the present prediction in most quarters in Washington.

To be sure, since November 5 the Democratic holdovers, particularly among the civil servants, have been walking more jauntily, talking more volubly, and, generally, reminding themselves and others of their work during the New Deal and the Fair Deal.

This is also the season, in Washington, when each of the agencies presents and defends its budget requests for the forthcoming fiscal year. It is entirely obvious that the election results encouraged many budget officers to add to their requests, which previously they would not have had the courage to do. When the Budget Bureau, which is part of the administrative offices of the Executive and is housed in the White House, goes through with its usual ritual of cutting requests, it will almost certainly be faced with a far tougher position on the part of the various departmental representatives.

It is in this area of fiscal matters —particularly, spending — that the tugging and hauling of the next two years is likely to be concentrated. The President has already made it clear that, in so far as he can prevent it, those years will not be a period of free spending. His principal comment on the results of the election was that it was the spenders who were elected. He also made very clear that he would do everything in his power to frustrate their spending efforts.

To accomplish this, he has one very strong weapon, the veto, and also some strong allies in the Congress. Curiously, these allies are, for the most part, members of the party theoretically regarded as the opposition. His principal allies, in addition to a few stalwart conservative Republicans, will be the almost equally stalwart conservative Southern Democrats.

The President knows perfectly well that he cannot, with any certainty, count upon many of the newly elected members of Congress from his own party. To override a veto will require at least some votes from these conservatives. Thus, it is expected that the President, who has heretofore used his veto power rather infrequently will now be required to use this most forceful weapon far more often.

Nevertheless, Federal Government spending is virtually certain to increase. This means larger deficits and no tax reduction. If this trend spells further inflation, this is really what the electorate voted for. Those in Washington who look at election returns entirely from the economic point of view are now even more certain than ever that what the public really wants is moderate, but not runaway, inflation. They are no longer sure that this is a completely unwise policy.

Certainly, from the political point of view, the most unpopular measures engaged in by the Republican administration were those which attempted to prevent inflation. It can hardly be argued that the farmers don't want inflation. Their vote in the last election, which was predominantly Democratic, was unabashedly a vote for higher farm prices, even at the cost of a generally higher price level.

Wage-earners appear to have been voting rather consistently for higher wages, even at the cost of higher prices, for many years. Even among businessmen, despite the fact that they are probably the most loyal to the Republican position, there appears to be very little real unhappiness about the fact that we may be headed for an inflation-fed boom.

The construction industry can look forward to some pretty good times — and not unrealistically. In particular that part of the industry which depends upon government contracts is hopefully awaiting the time when the newly elected members of Congress who are pledged to a conservation and water development program for the western part of the United States can accomplish this end.

Similarly, those who are concerned with housing are not entirely unhappy about the fact that with Democratic control housing programs may not be the first victims of an anti-inflationary program. This has been the case for some time under the policies of the present Administration. The Democrats, however, can generally be relied on to make every effort to keep housing financing flowing without interruption.

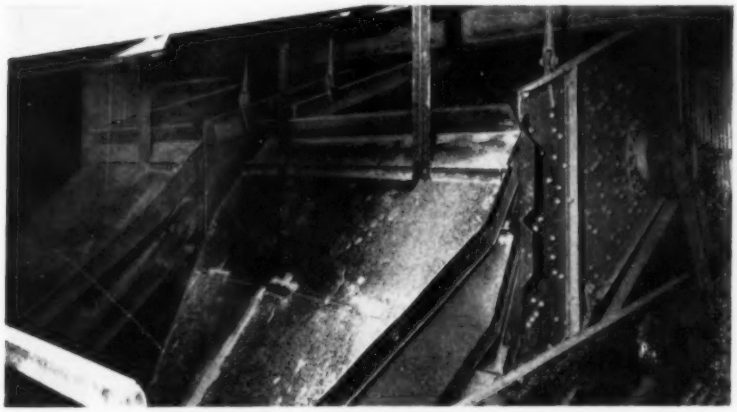
Moreover, since a substantial part of Democratic strength is lodged in the lower income groups (frequently minority groups) who have difficulty in achieving reasonably good housing conditions, a Democratic Congress is far more likely to restore many of the cuts in the Federal Housing Program. It may even increase appropriations above the levels of recent years. These are the measures which even a President dedicated to the prevention of inflation is not likely to veto. Even if

(*Continued on page 77*)

News Reports from Operators Reveal Stamina of SECO Twin-Bearing Screens

Now, you can expect and get a new kind of stout-hearted performance from two-bearing screens.

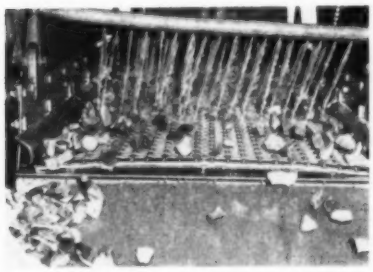
That is, if they are Seco Twin-Bearing screens. Yes, actual results, reported to us by producers themselves, give strong proof that SECO design and engineering superiority really pay off . . . day after day, year after year where it counts . . . on the job. Today, with your own profits so dependent on operational efficiency, we believe it will pay you to get the full information about SECO Twin-Bearing screens.



"Over 1,000,000 tons without a whimper from our SECO Twin-Bearing Screens" reports Jules Koczat of Buffalo Crushed Stone Corporation. "We've screened eight sizes of aggregate for 1½ years without a minute of downtime. We are so pleased we now have seven SECO Twin-Bearing screens on the job."

"We like the action and performance of this screen." Joe Schwendt, Sup't., Amico Sand & Gravel Co., Riverside, N. Y.

"This screen is a real screener. Elmer is very happy with it, and says they will be ordering more of them in a month or so." R. P. Fulton, Southern Machinery & Supply Co., Roanoke, Va.



"This sieve analysis is a real endorsement for your TWIN-BEARING screens." K. K. Kagarise, General Sup't., The Standard Slag Co., Youngstown, Ohio.

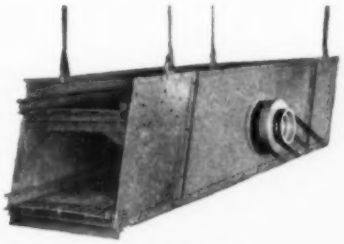
"Our TWIN-BEARING screens are doing a real good job of screening. Our only replacement has been screen cloth." Paul Padgett, Purchasing Agent, Thompson, Weinman & Company, Sylacauga, Alabama.

"I Never believed a two-bearing screen could perform like this." We're averaging 120 TPH in three sizes of gravel plus concrete sand . . . with no trouble at all on our 3 x 10 Triple Deck model." Eric A. Krehbiel, President, Clarence Sand and Gravel Corp., Clarence, New York.

Designed for Volume Low Cost Screening

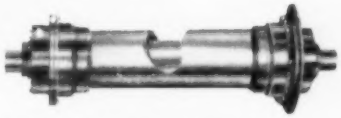
SAND • GRAVEL • CRUSHED STONE • CINDERS • SLAG and AG-LIME

Single, double, triple and half deck variations. May be suspension or base mounted.



RIGID BOX FRAME CONSTRUCTION

Eliminates body distortion thus preventing undue stress on shaft assembly.



20%-30% HEAVIER AND STRONGER SHAFT

The heart of the screen, precision built with an extra margin of safety and with extra heavy bearing, too!

OIL BATH BEARING LUBRICATION

Provides more thorough lubrication for longer bearing life. Special flinger type seals prevent oil entering the tube assembly.

SECO

TRUE CIRCULAR ACTION VIBRATING SCREENS

SEND FOR BULLETIN TB-21

SCREEN EQUIPMENT CO., INC., BUFFALO 25, N. Y.

27 ton "EUC"

MODEL R-27

325 or 335 h.p. . . . Torqmatic Drive . . . 18.00 x 25 tires

Model R-27 is a new size in the complete line of Euclid Rear-Dumps—rated payload is 54,000 lbs. This off-highway hauler incorporates the job-proved components which have made Euclid Rear-Dumps the outstanding choice of contractors, mines and quarries.

With either 325 h.p. GM diesel or 335 Cummins engine, the Allison Torqmatic Drive makes maximum use of the power for faster hauling cycles. Converter lock-up in the 4-speed Torqmatic permits 34 mph speed with full payload and efficient performance on long, high speed hauls.

Standard 18.00 x 25 tires on all four wheels assure the traction and load carrying capacity needed for moving 27-ton payloads on tough hauls. Standard body is rated at 18 cu. yds. struck —quarry type body is also available. The R-27 is equipped with oil retarder for safer, more economical braking on jobs with steep down-grades on the loaded haul.

See your Euclid dealer for detailed specifications on this new 27-ton Rear-Dump . . . it's a good example of the advanced design that makes Euclid your best equipment investment.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

REAR-DUMP

It's new...but JOB PROVED!

Big 18.00 x 25 tires on all wheels permit better distribution of payload. Rugged body and frame are designed to withstand loading, hauling and dumping big loads of heavy excavation year in and year out. Quarry body is available for rock work.

Low loading height and good maneuverability of the R-27 increase the efficiency of loading equipment. Exhaust heated body for work with wet, sticky material is optional. Front and rear springs are thrust-mounted and free floating, with variable spring centers.

The R-27 is equipped with dual steering jacks—one for each wheel—and an independent hydraulic system for steering. Oil retarder—an integral part of the Torqmatic Drive—permits faster safe travel speeds down grade and reduce brake maintenance cost.

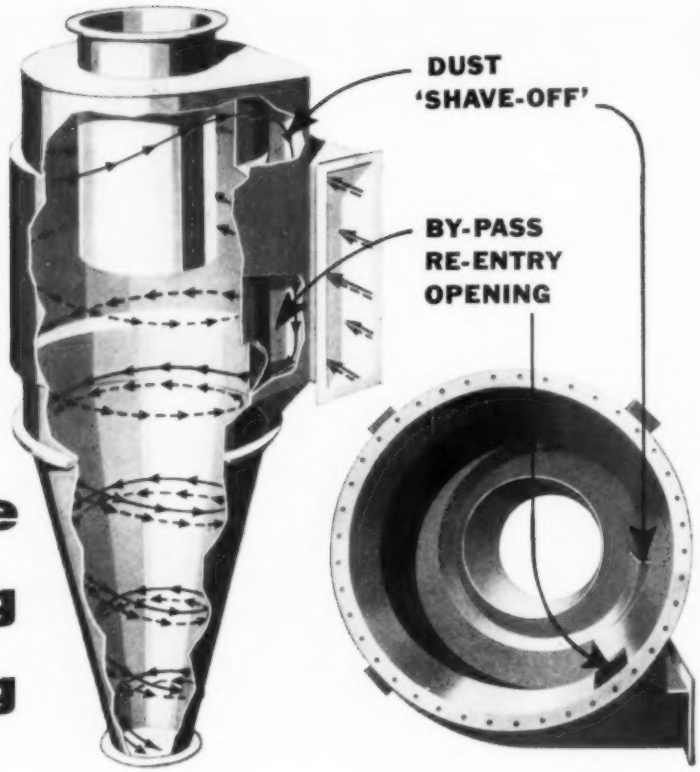
Large capacity hydraulic pump and twin hoists have ample power to raise and dump the load fast. Mounting brackets for the two stage double acting hoists are an integral part of frame assembly. Comfortable, well insulated cab is offset for maximum visibility.

A COMPLETE LINE OF REAR-DUMPS—

10, 15, 18, 22, 27, 40 and 50 ton capacities, also semi-trailer models of 12, 22 and 35 ton payload—to fit any job

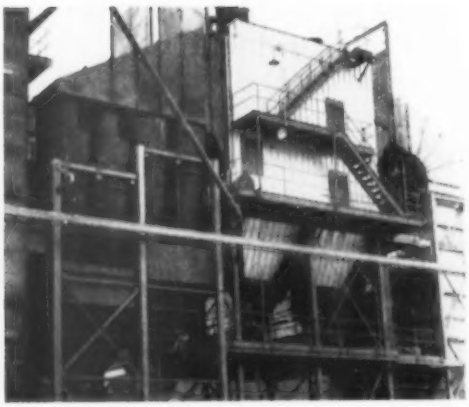
Enter 14 on card, page 105

This Cyclone won't clog or plug



Buell's exclusive 'Shave-off' design permits large diameter cyclones that will not clog, plug, or bridge when properly operated: you avoid unnecessary maintenance work or process interruptions.

The unique Shave-off port traps the dust that whirls upward in double-eddy currents, increases cyclone efficiency by eliminating this source of dust reentrainment. Whether installed singly or in groups, Buell Cyclones are the most efficient ever developed.



Large-diameter Buell Cyclones in series with Buell 'SF' Electric Precipitator.

Other features include extra heavy plate construction for longer service life, Buell-designed manifolds for more efficient, non-turbulent flow of dust-laden gases . . . and the confidence assured by a history of hundreds of installations everywhere in America. Write for a copy of the 12-page booklet, "The Exclusive Buell Cyclone": Dept. 18-L, Buell Engineering Company, Inc., 123 William Street, New York 38, N. Y.

buell®

Experts at delivering Extra Efficiency in **DUST COLLECTION SYSTEMS**

TELSMITH

designed and equipped

- **Equipment was quickly and easily installed.**
- **Compact, efficient plant meets all expectations and requirements of its owners—**

ONTARIO CUSTOM CRUSHING LIMITED
Brantford, Ontario

Designed to produce 150 tons per hour when making all minus $\frac{7}{8}$" aggregate—this modern, compact Telsmith plant can make all sizes of washed sand and gravel for construction requirements, including minus $1\frac{1}{4}$" plus $\frac{7}{8}$", minus $\frac{7}{8}$" plus $\frac{9}{16}$", minus $\frac{9}{16}$" plus $\frac{3}{16}$", minus $\frac{3}{16}$" sand.

Telsmith Equipped Throughout—CRUSHING UNIT: 30" x 5'6" Standard Duty Plate Feeder • 5' x 12' Double Deck Vibro-King Scalper • 13-B Gyratory Breaker • 48-FC Gyrasphere Secondary Crusher. WASHING-SIZING UNIT: Two 5' x 12' Triple Deck Vibro-King Sizing Screens • 24" x 19' Twin Screw Sand Classifier • 24" DorrClone Classifier.

All plant equipment was furnished by Ontario Equipment & Supply, Ltd., Telsmith Distributor, Toronto.

Send for Bulletin 266

Close-up of Crushing Unit showing Telsmith Vibro-King Scalper, 13-B Gyratory Breaker, and 48-FC Gyrasphere Secondary Crusher.

G-30

Airview of complete operation by Photographic Survey Corp. Ltd.

SMITH ENGINEERING WORKS

504 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • Cable Address: Sengworks, Milwaukee

Take it from the man in the driver's seat... here are big reasons

why operators recommend ...to increase your daily

"The International Payscraper does not nose over or up in tight spots," states Operator Cecil Dickson, for C. & Z. Construction Co., Memphis, Tenn. The three "75's" in this fleet each get a heaped 22-yard load in 25-32 seconds—with the TD-24 as pusher. The job: building farm-to-market road near Covington, Tenn.

Operating safety is essential on mountain terrain. Ripon Construction Co., working near Weaverville, California, appreciate International "75" Payscraper safety — handling a subcontract on a road in mountainous Trinity County, with three "75's" and two TD-24's for pusher power. Cuts run to 75 feet deep!

Payscrapers production!

This new TD-20 is pusher for a pair of fast-loading "55" Payscrapers—on a street improvement project in Denver. Horn Construction Co. is the contractor.

Riding on the shock-absorbing, deep-padded seat, the International Payscraper® operator soon learns he can cross rough spots—ascend or descend steep pitches, loaded or empty—without neck-snapping, spine-smacking jolting or bouncing. He practically gets automotive riding comfort!

When he needs positive braking, he has powerful, heavy-duty four-wheel air brakes—synchronized on both tractor and scraper wheels—to decelerate and stop surely, even with heap loads on steep grades. And for "walking" the rig through soggy going, he has auxiliary hand-braking of the individual drive wheels!

Guiding a big earthmover is no longer an athletic event—no longer demands "muscle" or tussle! The Payscraper gives him exclusive Hydro-Steer—hydraulic steering powered for smooth, positive one-hand turns! Even the clutch is air-assisted for operating ease and fast, positive action!

And an operator has no fear of "nose-diving" or jack-knifing—not with International Payscraper design! The oscillating hitch assembly and forward pitched spindle prevents these machine contortions! Low center of gravity means extra stability, too, on uneven terrain.

These are big reasons why operators have the confidence to use full Payscraper power and speed—to give you full capacity and cycle-speeding loading, hauling, and return!

"Our three '55' Payscrapers are best for our land clearing and stripping needs in this sandy area—and we compared thoroughly with competitive machines," states Tom Hutchinson, for Hutchinson Bros., Inc., Pompano Beach, Fla. "We like the way the '55's' boil up a full load fast; then get to the fill and back quick."

Get in the driver's seat—get the operator's feel of International Payscraper performance. See for yourself what a big factor complete operating ease and confidence can be in increasing earthmover capacity! See your International Construction Distributor for a demonstration!

International® Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors...Self-Propelled Scrapers and Bottom Dump Wagons...Crawlers and Rubber-Tired Loaders...Off-Highway Haulers...Diesel and Carbureted Engines...Motor Trucks...Farm Tractors and Equipment.

Enter 18 on card, page 105

One head gasket in 13,000 hours—that's the maintenance record of this UD-24 power unit shown pulling a 32 x 24 Universal impact breaker that produces 100 tons hourly of 3" minus base rock. Truck availability limits production.

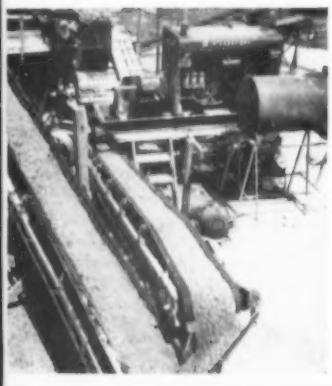
UD-24 repairs: 1 gasket after 13,000 hours in quarry grit; owner adds UD-1091

Roy Baker's lips aren't sealed when it comes to talking about the superior sealing of International engines that he has depended upon for nearly 5½ years in his rock quarry at Valley Falls, Kans.

He reports, "Of course I bought a UD-1091—another International. What else could I do when our old UD-24 has gone 65 months, running up 13,000 hours by averaging 200 hours monthly in the heaviest work with dust and grit all around? This UD-24 still runs good as ever and the only repair it has needed has been a head gasket replacement. Pistons, rings, and sleeves are still untouched."

Roy's brief remarks speak volumes for International power on any pit or quarry machine—complete dependability over the years with heavy duty diesel construction fully protected by sealing that keeps abrasives from reaching wearing parts through air, fuel, or lube oil. And the added bonus is world famous International economy of operation.

See how little it costs to power your machines with these engines by checking your International Power Unit Distributor or Dealer. He sells a full line of complete power units ranging from 16 to 250 hp singly, or to 500 hp when compounded.



Roy's new UD-1091 power unit, rated at 202 int. load hp @ 1,500 rpm, powers No. 3 Grundler Hammer Mill producing 80 tons of ½" minus topping rock hourly.

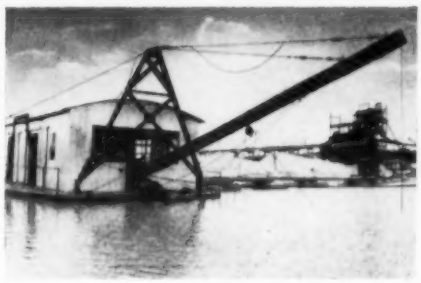
International® Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Amsco pump application file —Bluff Creek, Louisiana

"Parts for our 3 Amsco pumps cost us only 8¢ per ton of material pumped..."



Says Mr. C. S. Harper, Supt. of Flint Sand & Gravel Company, Bluff Creek, Louisiana.

"And since 1928 we've never lost a day of production waiting for parts. Amsco people give us great service.

"The Amsco design is so simple, we can change-out a whole pump in 12 hours. Change impellers in 4 hours. Replace suction liners in only 2 hours.

"We've got two 12-inch, and one 10-inch electric-driven Amsco counterflow pumps with flexible couplings. One of them is 16 years old and still working fine."

Flint Sand & Gravel dredges a 60% sand, 40% gravel deposit. Uses plain suction. Lift is 65 feet over a pipeline length of 900 feet. Flint Sand & Gravel Co. has operated 2100 days without a lost time accident.

Amsco® Dredge Pump standard sizes range from 6" to 20" discharge openings. Larger sizes are also available. An Amsco pump engineer will be glad to discuss your requirements, or write for Bulletin 1052P containing full information and specifications on the Amsco line.

AMERICAN Brake Shoe COMPANY

AMSCO American Manganese Steel Division
Chicago Heights, Illinois

Enter 21 on card, page 105

← Enter 20 on card, page 105

Bigger Equipment

Fast, powerful 6-yd. dragline reaches way out for a heaped bucket.

...The answer to higher production at lower net cost

The trend among producers everywhere has been a steady move to the use of bigger equipment in quarries and plants. Because the larger machines can work faster and produce more with reduced labor requirements, the cost per ton produced is substantially lower. Greater productivity cancels out the higher initial investment in a surprisingly short time.

Shovel prime producer. In the sand and gravel and crushed stone industries, the power shovel remains, today more than ever before, the primary producer. Your production rate depends upon it and unit costs will usually vary inversely with the hourly output of the shovel. As the shovel capacity grows larger, labor costs remain practically the same. After all, it takes the same operator to run a 5-yd. machine or a 1-yd. rig. Without increasing the labor cost, substantially greater tonnage can be moved. Generally speaking, the most modern and successful operators in this business today have discovered that in the long run, the most economical equipment is big equipment.

Big 3-yd. shovel has stamina to keep digging rock without letup.

Longer working life. In rock or stone, nothing beats the trouble-free digging and loading ability of a big, rugged shovel in a 3-yd. or larger capacity. Powerful, fast shovels are built to take the rough punishment of rock digging for years on end without expensive breakdowns. Units built by the Manitowoc Engineering Corp., for instance, illustrate how the manufacturer *engineers* every component of his machine to meet the rigors of pit and quarry work. Manitowocs have reinforced, alloy steel dipper sticks; huge, heavy carbodies; extra-stable, wide-spread crawlers; powerful, independent chain crowds with a high speed retract; 3-stage torque converter power applications; simple design with "Power-Flo" drive using a minimum number of gears; long-life, alloy steel utilized at every point of greatest wear; and many other long-lasting parts to insure steady production with the least amount of attention and service.

Get ready now to meet the stepped-up demands for cement and stone. Increase your pit output and raise your profit margin by switching to larger equipment soon. Modern, big-capacity excavators will give you a better chance to make a fair profit in the busy, highly competitive days ahead. To beat the competition, you'll want a hard-digging Manitowoc with the power, speed and reach to put you way ahead. Your Manitowoc distributor is the man to see . . . now! And ask him for a copy of the helpful, informative folder, "Manitowoc for more Profitable Production" . . . it contains details you'll want to know about the full line of Manitowoc units, ranging from 1-yd. to 5½-yd. in capacity. Manitowoc Engineering Corp., Manitowoc, Wisconsin. (A subsidiary of The Manitowoc Company, Inc.).

News of the Industry

Charles W. Ireland

Ireland Elected President Of National Slag Association

The election of Charles W. Ireland as president of the National Slag Association at its 41st Annual Meeting this fall was announced recently. Mr. Ireland is president of Vulcan Materials Company, Birmingham, Ala.

Mr. Ireland succeeds A. W. Wood, president of Lorain Slag Company, who remains as a member-at-large and member of the Association's executive committee.

Other officers elected were H. N. Snyder, president of Buffalo Slag Company, to the post of vice-president; E. W. Bauman of Washington, D. C., as managing director; W. S. Shaw as treasurer.

Clinchfield Coal Company Builds Light Aggregate Plant

Link-Belt Company has been awarded a contract by Clinchfield Coal Company, a division of The Pittston Company, to design and build a lightweight aggregate plant.

The new plant is under construction at Clinchfield, Va., and will use as its raw material the shale from Clinchfield's new Moss No. 3 coal preparation plant at the same site. The lightweight aggregate plant is expected to be opened in January.

Western Gypsum Products Ltd., of Vancouver, B. C., a new industry, will build a plant to be completed by the end of 1959 for the production of gypsum board and plaster. Cost is estimated at $2,000,000.

France Stone Company To Reopen Luckey Plant Of National Gypsum Co.

The France Stone Company of Toledo recently bought the closed National Gypsum Co. plant at Luckey, Ohio, which it plans to have in full operation next spring.

The facility, which will be used to produce crushed stone, is being equipped with new machinery.

The Luckey plant had been in operation for 35 years when it was closed two months ago.

Coming Events

January 12-15, 1959—Cleveland, Ohio. National Concrete Masonry Association, 39th annual meeting and 11th biennial concrete industries exposition. Cleveland Public Auditorium.

January 19-21, 1959—Washington, D.C. 14th Annual Convention, National Agricultural Limestone Institute. Hotel Statler.

January 19-22, 1959 — Dallas, Tex. 57th annual convention and 5th materials and services exhibit, American Road Builders' Association. Dallas Memorial Auditorium.

January 21-22, 1959—Washington, D.C. 4th annual convention. National Crushed Limestone Institute. Hotel Statler.

January 25-29, 1959 — Chicago, Ill. 40th annual meeting, Associated Equipment Distributors. Conrad Hilton Hotel.

January 27-30, 1959 — Miami Beach. 42nd annual convention, National Crushed Stone Association. Americana Hotel.

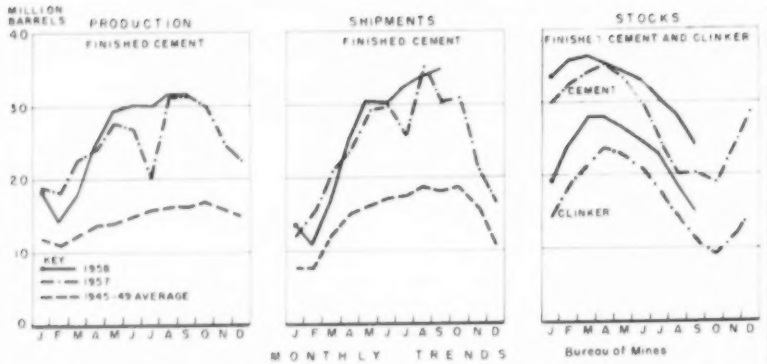
February 2-6, 1959 — Miami Beach, Fla. Convention, National Bituminous Concrete Association. Americana Hotel.

February 2-6, 1959—Pittsburgh, Pa. Committee meeting, American Society for Testing Materials. William Penn Hotel.

February 15-19, 1959—San Francisco. Annual meeting, American Institute of Mining, Metallurgical, and Petroleum Engineers.

February 16-19, 1959—New Orleans. 43rd annual convention, National Sand and Gravel Association, 29th annual convention, National Ready Mixed Concrete Association. Roosevelt Hotel.

February 23-27, 1959 — Los Angeles. 55th annual convention, American Concrete Institute. Statler-Hilton Hotel.



SUMMARY—Production of finished portland cement in September, 1958, as reported to the U.S. Bureau of Mines, totaled 31,597,000 bbl., 2 percent over September, 1957.

PRODUCTION—One hundred and sixty-three (163) plants in 37 states and Puerto Rico reported a production of 31,597,000 produced in September, 1958.

Production of clinker during the month of September, 1958, was 28,124,000 bbl. compared with 28,112,000 bbl. produced in September, 1957.

High early-strength portland cement production in September, 1958, totaled 782,000 bbl., an increase of 1 percent over the September, 1957, production.

Prepared masonry cement production in September, 1958, of 1,343,000 bbl. increased 10 percent over the September, 1957, figure.

SHIPMENTS—Mill shipments of finished portland cement for September, 1958, totaled 34,767,000 bbl. compared with 30,511,000 bbl. in September, 1957.

In September, 1958, shipments were higher in nineteen (19) districts and lower in four (4) districts than in September, 1957. The largest increases were in Oregon-Washington, Georgia-Florida, and Tennessee districts. The greatest decreases were in Puerto Rico, and Illinois districts.

Mill shipments of prepared masonry cement in September, 1958, totaled 1,509,000 bbl., an increase of 32 percent over the 1,144,000 bbl. shipped in September, 1957. Over one-half of these shipments were from mills in the northern states east of the Mississippi River. Prepared masonry cements are shown in 376-lb. bbl. although they are sold in barrels of varying weights.

STOCKS—Mill stocks of finished portland cement on hand September 30, 1958, totaled 24,449,000 bbl., an increase of 21 percent over the 20,250,000 bbl. on hand September 30, 1957.

FIRST NINE MONTHS—For the January-September period this year, the volume of production of finished cement amounted to 226,851,000 bbl. compared with 220,280,000 bbl. in the same period of 1957. Total shipments for the first nine months of 1958 are reported as 229,275,000 bbl.; in 1957 (January-September period) the total shipments were 220,600,000 bbl.

● The cover picture for this issue of PIT AND QUARRY shows one of the control consoles in the new Lake Asbestos of Quebec, Ltd., mill at Black Lake, Que. The scene typifies not only the modern flow design of this new asbestos mill—in this case the control of material flow from finished fiber storage to appropriate packing equipment—but also the high degree of instrumented automation and control found increasingly in evidence in new or modernized plants of our nonmetallics industries.

Calaveras Cement Subsidiary To Sell Machinery in California

Portland-cement producers have always been important purchasers of machinery. But it remained for Calaveras Cement Company of San Francisco to turn the tables and sell machinery.

Calco Supply Company, formed for this purpose as a wholly-owned subsidiary of Calaveras, will represent several well-known machinery and equipment makers in northern and central California.

Calco officers are E. M. Barker, president; B. B. Woodward Jr., vice-president; Joseph Tedesco, treasurer; and Emmet J. Norris Jr., secretary. All are affiliated with the management of the parent company. James White will be sales manager.

THOMAS S. HOLDEN, vice-chairman and former president of F. W. Dodge Corporation, N. Y., died unexpectedly on November 3. As an expert in the building industry, he wrote widely for newspapers, magazines, and was often quoted on matters pertaining to construction.

NEW brochure of ideas for modernizing

This booklet is based on the premise that modernization can start anywhere in your plant. It can be a single machine or operation . . . a better way of getting variable speed . . . a faster way to braze . . . or a newly available replacement. In fact, this type of updating is far more common than the sweeping change.

Get a copy of "59 ideas for modernization in '59" from your nearby A-C office or write Allis-Chalmers, Industries Group, Milwaukee 1, Wisconsin.

New motor development may eliminate premiums you've been paying for specially protected motors.

Electrical modernization includes placing substations close to machines being served.

ALLIS-CHALMERS

A-5850

Enter 24 on card, page 105

Crushing Specification Stone?

Bonus capacity, superior quality with Hydrocone Crushers

YOU can gain extra hours of production each time you change a setting in the *Hydrocone* crusher. Just flip a switch, and in *less than a minute* the *Hydroset* mechanism raises or lowers the crushing cone for precise control of product size. Equally important, you get superior quality stone to meet rigid specifications. Crushing chamber design and choice of eccentric throws assure uniform cubical characteristics and even distribution in all mesh sizes.

Adjusts for wear, clears tramp iron and releases jams

"One-man, one-minute" operation also applies to compensating for wear on mantle and concave, and emergency unloading — just flip the switch to raise the mainshaft. In addition, you get protection against tramp iron or other uncrushable materials with an automatic reset in the hydraulic system.

To get all the details on the fastest and most efficient crusher operation, ask your A-C representative for Bulletin 07B7145B. Or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

Hydrocone and Hydroset are Allis-Chalmers trademarks.

A-5593

ALLIS-CHALMERS

Announce Merger Setup For Material Service And General Dynamics

The proposed merger of Material Service Corporation, Chicago, with General Dynamics Corporation, New York, was announced in November. It was indicated that Material Service, headed by Col. Henry Crown, would be acquired by the New York firm by an exchange of stock, and that it would be operated as a division of General Dynamics.

Only certain legal procedures, approval of stockholders, and clearance of the merger by the Securities and Exhange Commission remained to be accomplished to complete the proposed deal.

Material Service produces crushed stone sand, gravel, lime, ready-mixed concrete, and related materials. It also mines and sells coal and distributes fuel oil, cement, brick, and other building products. Its fleet of barges and towboats represent another facet of the firm's far-flung operations.

Present operation and structure of Material Service is expected to remain as at present, and no personal changes are anticipated as a result of the pending merger.

●An army of more than 60,000 volunteer workers will participate in the 21st annual "Greater Victories" 1959 March of Dimes fund campaign from January 2 through 31, 1959. The National Foundation will widen its scope of research this year to include the fields of birth defects, arthritis, and virus diseases; it will also continue the fight against polio. Campaign goal for 1959 is $65,000,000.

1959 Officers Announced By S. Michigan S.-G. Assn.—Ray Elected President

Officers for the year 1959 have been selected by the Southern Michigan Sand and Gravel Association. Cornelius N. Ray, president of Ray Industries, Inc., Oxford, has been elected president.

Lyle J. Walker, a partner of Lyle J. Walker Sand and Gravel Company, New Hudson, is the new vice-president, and Charles Gooding, president of Whittaker and Gooding, Ypsilanti is the newly elected treasurer. Frank Higby, vice-president of New Hudson Sand and Gravel Company, is secretary.

Heavy-Media Separation Unit Installed at Illinois Quarry

Conco-Western Quarries, North Aurora, Ill., has purchased a 50-t.p.h. heavy-media separation plant from Eagle Iron Works to remove chert from crushed stone.

The Ore and Chemical Corporation separatory vessel, which is a part of this plant, will provide removal of the chert through the sink-float principle, retaining only the hard stone, which will meet specifications.

This equipment is made in four block sections for easy transporting and assembling at the plant site.

14th Annual N.A.L.I. Convention Program

Hotel Statler, Washington, D. C., Jan. 20-21

TUESDAY, JANUARY 20

MORNING SESSION
FEDERAL ROOM

Presiding—Chairman of the Board, William E. Stone
Registration—Foyer of FEDERAL ROOM
9:00 a.m. — Movie—"Rebirth of the Good Earth"—DeKalb Agricultural Association, Incorporated
9:30 a.m.—Call to order and welcome by the chairman of the board
Reading of minutes of previous meeting
Treasurer's Report—J. B. Mount
Committee reports by chairmen:
- By-laws—Leo L. Davis
- Convention Arrangements—Leonard S. Fry
- Finance and Budget—J. B. Mount
- Legislative, Public Relations and Tax—Powell G. Potts
- Membership—Arthur R. Alvis
- Promotion and Education—George A. Zeigler
- State Associations—W. A. Canary
- Regional Committees—Dana G. Farber

Old Business
New Business
10:45 a.m.—Percentage Depletion—John T. Sapienza, N.A.L.I. counsel
11:30 a.m.—"Ostriches Are for the Zoo"—C. Carney Smith

GREETING LUNCHEON—12:30 p.m.
CONGRESSIONAL ROOM

Presiding — Regional Vice-President Robert M. Bridges
A Report — Robert M. Koch, President, N.A.L.I.

AFTERNOON SESSION—2:30 p.m.
FEDERAL ROOM

Panel on promotion and A.C.P.
How Can N.A.L.I. Help Promote Aglime Sales?—Presentation of promotional materials and services available to members of the Institute—Samuel Omasta, vice-president, N.A.L.I.

MANUFACTURERS' DIVISION GUEST NIGHT
PRESIDENTIAL BALLROOM—6:00 p.m.
Buffet Dinner—Dance

WEDNESDAY, JANUARY 21

MANUFACTURERS' DIVISION BREAKFAST AND MEETING—8:00 a.m.
OHIO ROOM

Registration—Foyer, FEDERAL ROOM
Chairman—George S. Harvey

MORNING SESSION
FEDERAL ROOM

9:00 a.m. — Movies, "We're Blasting Near You"—Atlas Powder Co. and "The Rumor"—American Aggregates Corp.
Panel on Operations—Co-chairmen Robert M. Patton, and Paul W. Seitz, directors.

LUNCHEON—12:30 p.m.
CONGRESSIONAL ROOM

Presiding—Vice-chairman of the board, W. L. Bryan
"Present Concept of Depreciation and Salvage"—Webster C. McEachern

AFTERNOON SESSION—2:30 p.m.
FEDERAL ROOM

Manufacturers' Division representatives and producers will discuss individual operational problems

RECEPTION—6:00 p.m.
CONGRESSIONAL ROOM
ANNUAL BANQUET—7:00 p.m.
PRESIDENTIAL BALLROOM

Presiding—Chairman of the Board, William E. Stone
"Don't Sell America Short"—The Hon. Calvin D. Johnson, Former Republican Congressman from Illinois

Sept. Construction Total Up 26% from 1957 Figure—9-Month Total 7% Higher

Contracts for future construction in the United States in September totalled $3,215,919,000, an increase of 26 percent above the like month of 1957, according to F. W. Dodge Corporation, construction news and marketing specialists.

George Cline Smith, Dodge vice-president and economist, said that the September increase of 26 percent was the highest over the corresponding month of 1957 that has been reported so far this year. "However," he added, "September marks the third month in a row with an increase of more than 20 percent over last year, and the fifth consecutive month in which the dollar volume of contracts amounted to more than $3,000,000,000."

"Publicly owned projects," Dr. Smith reported, "continue to provide the major part of the stimulus, but in September privately owned projects also increased sharply. Public-ownership contracts rose 29 percent over September, 1957, and private projects were up nearly 25 percent."

According to Dodge figures, residential building contracts in September totalled $1,460,270,000, up 27 percent from the September, 1957, total. September contracts covered 114,642 dwelling units, an increase of 33 per cent over the corresponding month of 1957. It is the largest percentage gain in this category this year. The spread between the percentage gain in dollar volume and in the number of units reflects the trend toward smaller average size units, particularly apartments.

Heavy engineering contracts in September amounted to $863,415,000, an increase of 62 percent above September, 1957.

In the non-residential category in September, contracts for future construction totalled $892,234,000, a gain of 3 percent over September, 1957. Commercial building contracts registered a gain of 31 percent; manufacturing building contracts, however, were down 17 percent.

The cumulative total of contracts for the first nine months of 1958 amounted to $26,985,813,000, up 7 percent over the like period in 1957. The cumulative contract totals, by major construction categories, shows: non-residential at $8,504,854,000, down 3 percent; residential at $10,945,492,000, up 7 percent; and heavy engineering at $7,535,467,000, up 21 percent.

Marquette Does It Again—Report Is 14-Time Winner

For the fourteenth consecutive year Marquette Cement Manufacturing Company, Chicago, Ill., has been honored for excellence in annual reporting. The independent board of judges in the *Financial World* annual report survey announced its finding that the company's 1957 annual report was best in the cement industry. A bronze Oscar of Industry trophy was presented to W. A. Wecker, Marquette president at the Annual Awards Banquet.

Marquette now holds 19 such awards, including two gold Oscars for the best of all annual reports, three silver trophies for the best of all manufacturing company reports, and 14 industry awards.

FAST-MOVING TYRONE ROCK CUTS GRANITE DRILLING COST

with Brunner & Lay Rok-Bits

Brunner & Lay carbide Rok-Bits in these body types—cross, chisel, "X", cutaway, taper-socket. Furnished in standard wagon drill and hand drill threads—also 1,000; 700; 600; 400; 200; J5.23; J5.5 and J7.5. Bit sizes up to 7" in our Hole-Master.

Alloy and carbon drill steel, also extension rods in ⅞" and 1" hex. alloy and in 1½", 1¾" and 2" round carbon steel. All standard threads.

In drilling blast holes to 55 ft. in hard Georgia granite, Tyrone Rock Products Co., Forrest Park, Ga., increased drilling speed and reduced bit changes by using Brunner & Lay carbide Rok-Bits. Tough on bits, yet the crews get up to 300 ft. of hole per bit. Are you closing your eyes to better bit performance? Check your present bit against Rok-Bits—and see. Call your dealer, or write our nearest plant. Request NEW bulletin No. DA 1-58 on your letterhead, stating your position. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. *76 progressive years.* Plants & warehouses: Philadelphia; Asheville; Birmingham; Dallas; Albuquerque; Denver; Los Angeles; Sacramento; Portland; Seattle & Lachine, P.Q.

Brunner & Lay Products

CARBIDE ROK-BITS • INTRA-SET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & EXTENSION STEEL

Enter 27 on card, page 105

Operating 19 Link-Belt Speeder shovel-cranes, Gifford-Hill Companies from Louisiana to West Texas demonstrate how

King-size

HERE'S an organization that has standardized on Link-Belt Speeder shovel-cranes—uses models ranging from ½ to 3-yard capacities. Their experience with the King-size K-models (the 1¾-yd. K-370 and the 3-yd. K-608) has proved the K's are as fast and maneuverable as smaller rigs . . . frequently outproduce machines of larger ratings.

This bonus in output stems from the many Link-Belt Speeder advanced design features including Speed-o-Matic power hydraulic controls . . . bonus usable horsepower . . . hydraulic power steer.

If you'd like details on any Link-Belt Speeder crawler or rubber-tired models and the facts why they will help you move ahead of competition—contact your distributor or write LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA.

OPERATOR'S REPORT: Running one of Gifford-Hill's 19 Link-Belt Speeder machines (a K-595 dragline) is Eugene Jistel. He says, "It's a very fast dragline for getting the work out . . . also is very easy to handle because of Speed-o-Matic. It has plenty of power and is easy to steer."

K-models deliver bonus output

AVERAGE PRODUCTION IS HIGH for this K-608 at Gifford-Hill's Bridgeport, Texas operation. Rig is equipped with torque converter as standard equipment. High-speed cycles pay off in a hurry, also increase efficiency of haulers.

1¾-YD. K-375 STRIPS OVERBURDEN—LOADS TRUCKS. With Speed-o-Matic controls, bonus usable horsepower (138 hp at the drums), power steer and extra strength of all components—this K-375 maintains steady pace year after year.

LINK-BELT SPEEDER

It's time to compare . . . with a Link-Belt Speeder

Preliminary N.C.S.A. Program Plans

Plans are being made for the 42nd annual convention of the National Crushed Stone Association, scheduled for January 27 through 30, 1959, at the Americana Hotel in Miami Beach, Fla. A preliminary schedule of program events include addresses on *Safety Progress in the Crushed Stone Industry, The First International Skid Prevention Conference, New N.C.S.A. Accounting Manual for the Crushed Stone Industry*, and *Startling Implication of Union Political Power*.

A round table will be held on the application of the new N.C.S.A. accounting manual during the afternoon session of the first day.

In a special session for executives, *Federal Regulations, Percentage Depletion, Depreciation, Taxes*, and *Labor Relations*, will be the topics discussed. On the first day, a general session will include a discussion of *Large Size Aggregate Bituminous Concrete Base Construction, Bituminous Concrete Placing—Operation and Control*, and *Maintaining Harmonious Management-Labor Relationships Under Present Day Conditions*.

There will also be special sessions for operating men and equipment manufacturers.

New N.C.S.A. officers and executive committee members will be introduced at the greeting luncheon on the first day; and at the Manufacturers Division luncheon the recently elected officers of that division will be presented.

Details of the program will be given in our next issue.

L. L. Hank Appointed V.P. Of Natl. Gypsum Operations

Leonard L. Hank has been promoted to the post of vice-president of operations for the National Gypsum Company. Until his promotion, which is effective immediately, Mr. Hank has been vice-president in charge of manufacturing. He succeeds Wells F. Anderson, who died on September 21.

In his new position Mr. Hank will be in charge of National Gypsum's 38 plants, the company's mines and quarries, and its purchasing and plant public relations divisions.

Mr. Hank joined National Gypsum in 1946 as manager of the company's Kalamazoo paper plant. In 1950 he was promoted to production manager and transferred to the company's headquarters in Buffalo. In 1954 he was elevated to general production manager for the company's gypsum, paper, and insulation board plants. He was named manufacturing vice-president in 1956.

Leonard L. Hank

Eight New Cement Plants Authorized by Indian Govt.

Cement production in India totaled 5,600,000 long tons in 1957, compared with 4,928,000 tons in 1956, an increase of 14 percent. The Union Government has granted licenses for seven cement plants, with an estimated total annual production of 1,000,000 tons, to be established in the state of Andhra. Kurnool, Visakhapatnam, and Adilabad districts will each have one plant. Two will be established in Gudur and two in Cuddapah.

A license has also been issued for a cement plant at Pondicherry.

Naiman Corp. Expansion To Increase Production To 2,000,000 Tons Annually

New equipment costing $850,000 has been purchased by the Alvin Naiman Corporation, Port Colborne, Ont., as a part of an expansion of its stone quarry operations.

It was announced that Naiman, which purchased the Niagara Crushed Stone Ltd. facilities at Port Colborne earlier this year, has increased production of crushed stone from its own quarry from 1,200 t.p.d. to about 7,000 t.p.d.

New equipment purchased includes three crushers, five Euclid dump trucks, a power shovel, and several large Joy automatic drills.

Pacific Cement & Aggregates Wins 5% Depletion Allowance

Pacific Cement and Aggregates, Inc., San Francisco, has won its case for 5 percent depletion allowance on its sand-and-gravel holdings near Fair Oaks, Calif.

The U. S. Tax Court overruled an Internal Revenue Service claim against the corporation for $47,082 in additional taxes for the years 1953 and 1954. The agency had contended that a depletion allowance could not be deducted since the deposit involved worked-over mining lands which had been dredged for gold many years ago and that its "minerals" had already been extracted.

Arsenal Sand & Gravel Co. Opens Minneapolis Plant

More sand and gravel for the Minneapolis construction market became available when the new plant of the Arsenal Sand and Gravel Company near New Brighton, Minn., went into production recently. Estimated capacity of the Arsenal plant is 150 t.p.h.

Test probes of the property show a continuous supply of pure gravel and rock to a depth of 250 ft. The 93-acre plot may produce as much as 40,000,000 tons.

Eagle Iron Works has announced the placement of an order by Gillessee Construction Company, Grand Rapids, Mich., for an Eagle heavy-media separatory plant for removal of chert and sandstone from gravel. The plant is to be delivered this winter for operation next spring.

Enter 31 on card, page 105 →

Yes!...it's ALL STEEL

HP RANGE:
½ to 50 hp

RATIOS:
4:1—14:1—24:1 (or 20:1)

OUTPUT SPEED RANGE:
420 to 5 rpm

TORQUE RATINGS:
up to 31,500 lb-in

FALK ALL STEEL Shaft Mounted Drive

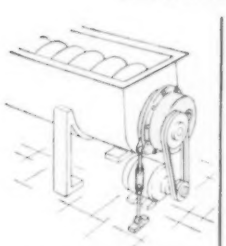
...Steel can "take it"!

STEEL frame ...of fabricated plate supports all rotating elements—provides double the ability of iron to maintain vital alignment of revolving elements, even under shock load or external impact.

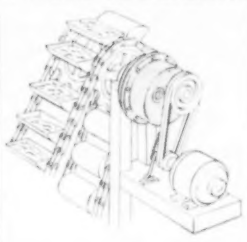
STEEL housing...will not fracture, serves only as protective cover and lubricant reservoir. Therefore, lubricant supply is safeguarded.

STEEL tie-rod and straddle-mounted tie rod brackets...are fastened to heavy steel frame by steel bolts in double shear.

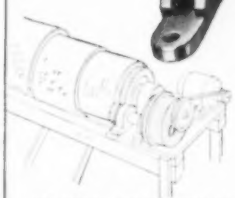
A FEW TYPICAL APPLICATIONS



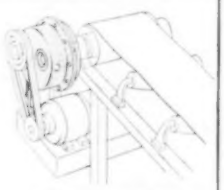
SCREW CONVEYOR



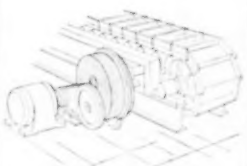
BUCKET ELEVATOR



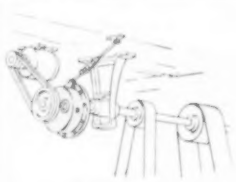
GRAVEL CLASSIFIER



BELT CONVEYOR



APRON FEEDER



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This air view shows the Drummond Island crushed stone plant of Drummond Dolomite, Inc., on the St. Mary's River at the head of Lake Huron. This operation will be expanded by a 3-year project which will make available an additional 150,000,000 tons of crushed stone, located in newly acquired deposits 6 miles east of the present plant.

Drummond Dolomite Adds 150,000,000-Ton Deposit In 3-Year Expansion Plan

A three-year expansion program designed to tap an additional 150,000,000 tons of crushed stone for industrial purposes has been announced by Curt Knoblock, general manager of Drummond Dolomite, Inc., Detour, Mich.

The newly-acquired deposits are in the Huron Bay area on the south shore of Drummond Island, Mich. The site is six miles east of the company's present dolomite processing plants on the St. Mary's River at the head of Lake Huron.

Clearing of timber in the Huron Bay area has started. The engineering firm of Walter H. Knapp, Inc., of Milwaukee, Wis., has been engaged to make surveys for the location of a railroad connecting the new deposits with the processing plant. Total cost of the project is estimated at $2,500,000. It was stated that construction of the railroad and preparation of the area for full production may require three years.

The new deposits which have been under exploration since 1956, cover a 2,700-acre tract extending from the northern tip of Huron Bay eastward to Warner's Cove and Canoe Bay. Further exploration will continue to the east and north of Warner's Cove.

Drummond Dolomite now processes ten sizes of crushed stone for the metallurgical, chemical, and construction industries at the rate of 2,500,000 tons a year. The plant was moved to Drummond Island from Sturgeon Bay, Wis., in 1944.

American Cement Company Building $14,000,000 Plant

Construction is under way on the Clarkdale, Ariz., plant of the American Cement Company, which will cost an estimated $14,000,000. Production will probably begin next August, and the plant will be operated as an autonomous division of the parent firm.

Capacity has been estimated according to the needs of the Glen Canyon Dam project, which has contracted with American Cement for deliveries totalling 3,100,000 bbl. of cement.

Preparation of more than 60 percent of the 30-acre site has been completed, involving 300,000 cu. yd. of material. Foundations for the raw material bins, the warehouse, and the machine shop have been poured.

W. P. Yant New Chairman Of Industrial Hygiene Group

The board of trustees of the Industrial Hygiene Foundation has announced the election of Dr. William P. Yant, director of research and development, Mine Safety Appliances Company, as chairman of the board.

The appointment of Dr. H. H. Schrenk, research director of the Foundation since 1949, as managing director was also announced. He succeeds Dr. C. R. Walmer.

1957 N.A.L.I. Liming Survey Shows Only Small Increase In Limestone Application

The annual nation-wide survey of producers and various agricultural authorities made by the National Agricultural Limestone Institute indicates that the farmers of this country used only a few more tons of agricultural limestone in 1957 than they did in 1956. The 22,116,318 tons applied on the nation's farms in 1957 is an increase of only 94,925 tons over the 1956 tonnage. And yet, soil scientists have estimated that our soils should be getting an annual application of more than 80 million tons.

Although the use of agricultural limestone has been proved by countless experiments at various agricultural colleges to result in substantial financial gain to the individual farmer who uses it, this fact apparently has not been a major consideration in the current use. Over two-thirds of the tonnage utilized in recent years has been on conservation crops, with financial assistance from the Agricultural Conservation Program. Although fertilizer companies, as well as county agents and other educational agencies continually stress the importance of adequate liming in efficient farming operations, the average farmer either feels that the benefits are too long delayed, or he does not have sufficient cash to use the optimum amount. It is quite apparent that the educational efforts of our agricultural agencies and of the agricultural limestone and allied industries are not adequately backing the Agricultural Conservation Program in influencing the American farmer to use proper amounts of liming material.

U. S. Aids in Construction Of Iceland's First Cement Plant

Iceland's first cement plant was built in the first part of 1958, with the financial assistance of the United States and West Germany and technical advice from Denmark.

Rated annual-production capacity is 75,000 metric tons. Until a new high-tension line from Elidaar station in Reykjavik is able to supply sufficient power to operate the clinker grinding mill, the plant will produce only clinker.

Enter 33 on card, page 105 →

BUYING A TRACTOR-LOADER?

Insist on honest answers to these basic questions . . .

1 HOW MUCH WORK CAN IT DO?

The all new Ford outlifts, outperforms any rig in its class!

2500 lb. lift — ⅝, ¾ and 1 cu. yd. tread width buckets among many attachments. **5500 lb. breakaway** — Unmatched pry-out capacity . . . no stalling in banks or frozen piles. **22° bucket roll-back** . . . Less spillage in transport . . . carry bucket low for greater stability. **5″ flat-bucket, below grade digging** — "Float" valve relieves down pressure when desired for grading, leveling. **24″ reach at 8′ 5″ dump height** — Big clearance over any standard truck side . . . load entirely from one side. **"Red Tiger" engine** — Biggest, most powerful ever made by Ford . . . choice of gasoline or diesel.

2 HOW STRONG IS IT BUILT?

The all new Ford is a glutton for punishment!

Heavy duty tractor — 7,000 lb. rated capacity front axle assembly . . . cast malleable combination grille and bumper . . . full length load-carrier frame. **Super-Duty Loader** — Rigid diagonal bracing eliminates bucket sway . . . tapered box section lift arms of lighter, stronger steel alloy to reduce dead weight . . . large, replaceable, heat treated pivot pins and bushings . . . all cylinder rods heat treated and chrome plated for long wear . . . most hydraulic lines internal, protected.

3 HOW DOES IT HANDLE?

The all new Ford provides easy, effortless operation!

Exclusive full hydraulic steering — Separate hydraulic system gives instant response, takes less than one turn of wheel to full left or right . . . cable controlled steering valve eliminates kickback . . . no mechanical parts to maintain. **Special steering wheel** — Slip clutch permits steering from any position, easily changed for stand-up driving . . . out of way in mounting tractor, shifting gears and using loader controls. **Foot throttle** — Pre-select operating speed with hand throttle, use over-riding foot throttle to speed loading cycle . . . frees one hand for loader controls. **Shuttle shifting** — Simple reversing transmission is factory-installed option for quick back-and-forth shifting. **Superior visibility** — No steering rods, radius rods, etc., to obstruct vision along sides . . . diagonal loader braces eliminate cross bracing, permit dramatically low design with no part of rig extending above top of steering wheel.

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THE HEART OF ANY TRACTOR-LOADER IS ITS HYDRAULIC SYSTEM

And there's nothing on the market to match the new Ford!

Exclusive "Universal" system — oil reservoir, pump, heat exchanger, and valve required for loader, backhoes, other attachments — is an integral protected part of the tractor . . . exclusive features include forced air heat exchanger to keep oil cool, micronic filtering, sealed, terne-plated sump to keep oil clean, and positive circulation to eliminate efficiency robbing cavitation. **Stack type control valves** — Give up pressure, down pressure and "float" position . . . positive valve feathering for instant, controlled response . . . safety and relief valves cushion tractor-loader from shock loads . . . extra attachments easily added . . . All of this is in addition to Ford's Hydraulic System for control of rear-mounted attachments and Ford's completely hydraulic steering system.

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NOW! ... climaxing 30 years' leadership in the industrial tractor field, FORD introduces:

NEW A rugged and powerful tractor designed solely for industrial work!

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NEW And due at your dealer's soon, an exclusive line of 10′, 12′ and 14′ Ford backhoes!

All retain Ford's traditional economy and versatility, yet offer unmatched performance and rugged stamina never before engineered into any equipment short of specialized and expensive "heavy machinery."

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Check your job needs against these ALL NEW FORD FEATURES

1 *New Ford Super-Duty Industrial Loader series 712*
2 *New Ford Industrial Tractor series 1801*
3 *New Ford 10′, 12′, 14′ Backhoe line coming soon! series 713.*

New Ford gives you mud-slogging, flat-torque power!

46.5 belt H.P. and 42.1 drawbar H.P. in gasoline models; 41.5 belt H.P. and 37.75 drawbar H.P. in diesel models (Manufacturer's rating).

New Ford combines plenty of work weight with "turn-on-a-dime" mobility!

Short wheelbase with low center of gravity gives excellent stability. Basic shipping weight of approx. 3800 lbs. can be increased to full weight-bearing capacity of rear tires (28″ cast iron wheel discs, optional, add 1200 lbs. to rear wheels; tire fill adds up to 900 lbs.; ring-type wheel weights can be added as desired).

New Ford offers wide choice of wheels and tires!

Standard 7.50 x 16 8-ply front tires are on steel disc type wheels with 5.50 x 16″ rims. Rear tires offer choice of 12 x 28 (standard), 13 x 24, or 14 x 24 with cleat or button tread.

New Ford saves time, reduces waste motion!

Convenient instrument and control cluster includes Proof-Meter, standard on all models. Bucket position indicator takes the guesswork out of bucket spotting . . . speeds up loading cycle.

New Ford cuts fatigue, spurs production!

Comfortably upholstered seat with back rest and optional all-weather cab give your operator a break, as does the wide-open, step-on mounting to tractor seat. Models 1841 and 1841-D are equipped with Ford's 3-point linkage and hydraulic system for effortless instant control of rear-mounted attachments.

New Ford offers full line of attachments!

Heavy, medium and light material buckets — all tread width with long, tapered cutting edges and curved backs for easy, efficient bucket filling. Also material fork, dozer blade, crane, and rear counterweight box for front or rear use. Quick 4-pin changing.

New Ford gives you multi-job versatility!

Ford's new line of matched and integral industrial tractors and equipment will include 10′, 12′ and 14′ backhoes and heavy duty dozer and rear blades . . . all due at your dealer's soon — and more on the way!

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Californians Pay Tribute To Coppocks at Dinner Honoring 58-Year Career

On the evening of October 9, 1959, the Statler Hotel in Los Angeles was the scene of a dinner party given by the Southern California Sand and Gravel and Ready Mixed Concrete Associations for their directors and their wives to honor Mr. and Mrs. Fred Coppock. Mr. Coppock is chairman of the board of American Aggregates Company.

Robert Mitchell, president of Consolidated Rock Products Company, who served as master of ceremonies, outlined the history of Mr. Coppock as a producer of sand and gravel. Beginning the story in 1900, Mr. Mitchell traced the growth of the various organizations which Mr. Coppock had created as the business grew in volume. His efforts culminated with the incorporation of American Aggregates Company, reportedly the largest producer of sand and gravel in the United States.

The guest of honor then delivered a most interesting address, in which he strongly emphasized the need of rehabilitation of exhausted gravel properties into useful and beautiful recreation centers. He stated that producers should be alert to their responsibilities to the public and that they should be benefactors to their communities.

Natl. S.&G., R.M.C. Associations Join A.G.C. in Committee

Formation of a national joint co-operative committee by the National Sand and Gravel Association, the National Ready Mixed Concrete Association, and the Associated General Contractors of America has been announced. It will be known as the Concrete and Aggregates Producers-Associated General Contractors Joint Co-operative Committee.

Leaders of the three organizations said the joint committee was especially needed because of important problems arising from the vast expansion of highway construction under the long-range federal-aid program and the steady increase in the dollar volume of construction activity in general.

The broad purpose of the C.A.P.-A.G.C. Joint Co-operative Committee is to provide a medium for the discussion of problems affecting members of the three associations and the formulation of recommendations concerning them for the consideration of the parent groups.

Fred D. Coppock

E. Phil Gemmer, Houston, Tex., president, National Sand and Gravel Association, and M. Eugene Sundt, Albuquerque, N. M., president, National Ready Mixed Concrete Association, announced the following eight appointments:

Robert Mitchell, Consolidated Rock Products Company, Los Angeles, co-chairman; Ralph H. Anderson Concrete Corporation, Columbus, Ohio; Fred P. Curtis, Lyman-Richey Sand & Gravel Corporation, Omaha; E. K. Davison, J. K. Davison & Brother, Pittsburgh; Herbert G. Jahncke, Jahncke Service, Incoporated, New Orleans; John W. Murphy, Union Sand and Gravel Company, Spokane; John W. Roberts, Southern Materials, Incorporated, Richmond, Va.; and F. E. Schouweiler, Old Fort Supply Company, Fort Wayne, Ind.

Fred W. Heldenfels Jr., Corpus Christi, Tex., president of A.G.C., also appointed eight members to the committee.

Co-secretaries of the committee are Vincent P. Ahearn, Washington, D. C., executive secretary, National Sand and Gravel Association and National Ready Mixed Concrete Association, and J. M. Sprouse, Washington, manager, Highway Contractors' Division, A.G.C.

Forecast of Dodge Corp. Sees Record Year in 1959 For Construction Industry

Construction in 1959 will set new records, both in contracts awarded and in work put in place, according to the recently released annual outlook statement of F. W. Dodge Corporation.

Contracts in 1959 for all types of construction will total $35,600,000,000, a 3 percent increase over this year's estimated $34,700,000,000, according to the Dodge figures.

The outlook statement was prepared by the late Thomas S. Holden, Dodge vice-chairman, who passed away unexpectedly on November 3, in collaboration with Dr. George Cline Smith, vice-president and economist, Clyde Shute, assistant vice-president and director of statistical policy, and Edwin W. Magee Jr., associate economist.

The principal upward push in construction contracts next year, according to the report, is expected to be in private projects, in contrast to this year, in which government-owned construction sparked the recovery from the recession.

The largest percentage increase, 14 percent, is expected to come in contracts for new factory buildings (as measured in floor area). The report notes, however, that this would still represent a recovery to a modest total; if better business should cause managements to revise their plans and appropriations for plant and equipment upward from the levels they presently indicate, this figure could go substantially higher.

Total public and private housing starts this year are estimated at 1,160,000, and no change is indicated in this figure for 1959. The report notes the adverse influence of rising interest rates on V.A. and F.H.A. programs, and the possibility of offsetting actions by Congress and the Administration in 1959. Dollar volume of residential contracts in 1959 is estimated at $14,300,000,000.

Contracts for nonresidential buildings are estimated at $11,600,000,000 in 1959, up 5 percent from 1958.

Heavy engineering contracts in 1959 are estimated at $9,700,000,000, up 2 percent from 1958.

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Architect's rendering of the new Bagpak plant in Litchfield, Ill.

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If your plant is situated in the heart of this busy mid-western market, you now have an even closer source for the full line of International multiwall bags.

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INTERNATIONAL PAPER

BAGPAK DIVISION, N.Y.17, N.Y.

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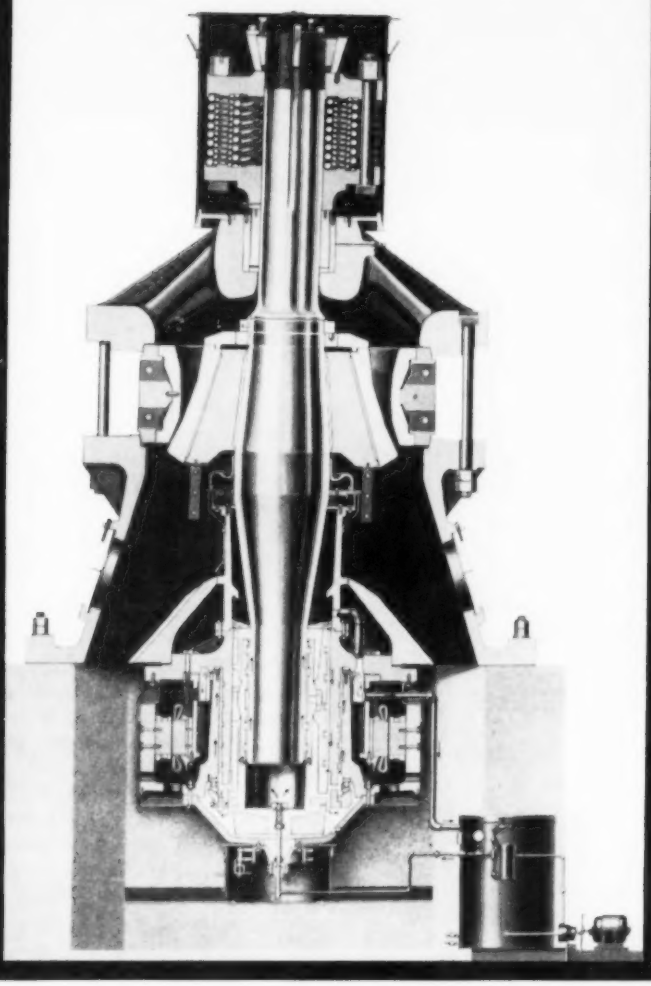
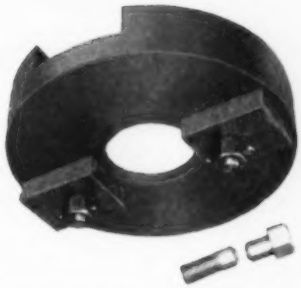
Exclusive with the KENNEDY Gearless Reduction Crusher



Ordinary tramp iron and uncrushable oversize is passed by the quick-acting, positive spring cage, without damage.



The KENNEDY patented built-in drive coupling with its overload device, provides positive protection against breakage from unusually large pieces of tramp iron. Operates only when uncrushable material enters crusher.

Uncrushable material inevitably finds its way into every reduction crusher. Only with the KENNEDY Gearless Reduction Crusher is absolute protection assured—for only KENNEDY provides 2-way protection against costly machine damage.

Write today for your copy of Bulletin No. 58-D describing the many other important features of the KENNEDY *Gearless Reduction Crusher.*

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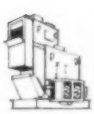
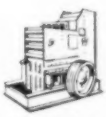
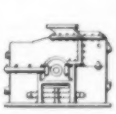
Primary Gyratory


Cuber Senior


Cuber Junior


Hammer Mill

Roll Crusher

Overhead Crusher

Swing Jaw Crusher

From left to right: George E. Warren, retiring board chairman of the Portland Cement Association; Cris Dobbins, newly elected board chairman; and G. Donald Kennedy, president of the Association.

Portland Cement Association Elects Cris Dobbins Chairman

Cris Dobbins, president of the Ideal Cement Company, Denver, was elected chairman of the board of directors of the Portland Cement Association at its annual meeting in Chicago.

Mr. Dobbins, who has served on the board of directors, and as a member of various committees since 1948, succeeds George E. Warren, president of the Southwestern Portland Cement Company, Los Angeles, Association chairman for the last two years.

Nine new directors were also elected by Association members at their annual meeting. They are Charles Baumberger Jr., president, San Antonio Portland Cement Company; Ben W. Calvin, president, Aetna Portland Cement Company; Richard A. Grant, executive vice-president, California Portland Cement Company, and Arizona Portland Cement Company; M. E. Grunewald, president, Coplay Cement Manufacturing Company; R. D. Raff, president, Diamond Portland Cement Company; Erik Thune, president, National Portland Cement Company; Walter H. Wulf, president and general manager, Monarch Cement Company; B. F. Cox, vice-president, British Columbia Cement Company, Ltd.; H. B. Robeson, president, Nazareth Cement Company.

Mr. Dobbins joined Ideal Cement Company in 1919.

'57 Fluorspar Production Up—Illinois Top Producing State

According to revised figures, fluorspar production in the United States in 1957 totalled 322,600 short tons of which 224,500 tons were flotation concentrates. In 1956, the output of finished fluorspar totalled 306,500 tons of which 217,600 tons were flotation concentrates. Shipments of all grades of finished fluorspar in 1957 totalled 328,900 tons compared with 329,700 tons in 1956. Metallurgical and ceramic grade fluorspar shipments declined in 1957, whereas the acid grade shipments increased.

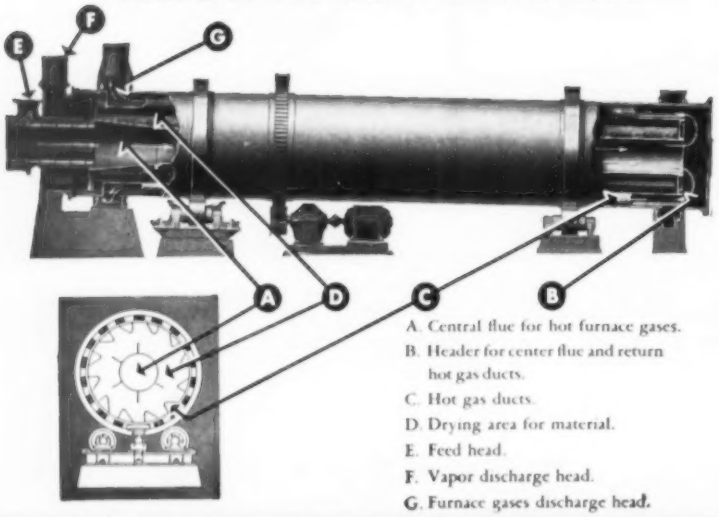
Although shipments from Illinois were slightly less in 1957 than in 1956, Illinois remained the largest producing state supplying about 52 percent of the entire domestic shipment of finished fluorspar.

In 1957, the industrial consumption of fluorspar increased to 644,700 tons, approximately 4 percent greater than the 621,400 tons consumed in 1956. Fluorspar was reported consumed in 37 states in 1957 with the three largest—Illinois, Ohio, and Pennsylvania—accounting for about 39 percent of the total consumption.

Producers reported that stocks of fluorspar at mines, mills and shipping points were 17,300 tons of finished and 207,700 tons of crude fluorspar at the end of 1957. Stocks at consumers' plants on December 31, 1957, totalled 228,000 tons or 20 percent greater than in 1956.

Fluorspar imported for consumption in 1957 established a new record of 631,400 tons at $16,000,000—exceeding domestic shipments for the sixth consecutive year—compared with 485,600 tons valued at $11,000,000 in 1956.

Ruggles-Coles INDIRECT-FIRED DRYERS and HEATERS



A. Central flue for hot furnace gases.
B. Header for center flue and return hot gas ducts.
C. Hot gas ducts.
D. Drying area for material.
E. Feed head.
F. Vapor discharge head.
G. Furnace gases discharge head.

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These two different jobs show you how you can always rely on Lorain reliability — regardless of the job requirement — regardless of the size you need. From 3/8 to 2½ yards as shovels, 7 to 75 tons as cranes, on crawlers or rubber tires — Lorain has profit-producers for your job.

• **MESHBERGER STONE CO., INC., Columbus, Ind.** uses its 2-yard Lorain (above) around the clock to dig and load limestone from an 18-ft. face into trucks. It works 22 hours out of 24. MESHBERGER OWNS 4 LORAINS.

• **OPITZ SAND & GRAVEL CO., Denton, Texas** OWNS 3 LORAINS. At right, its 1¾-yard Lorain Dragline with 70-ft. boom loads out sand and gravel at a washing plant. It also strips 20 foot of overburden. This Lorain has handled 3,000 yards in a 10-hour day — sufficient to easily keep up with plant capacity.

• Many models of the complete Lorain shovel-crane line have the following profit-producing features: the stronger, yet lighter, Lorain square-tubular-chord crane boom; 2-lever, "Joy-Stick" air power controls that permit easy, effortless, simpler operation; and the modern "Shear Ball" turntable mounting which eliminates the constant adjustment, maintenance and lubrication problems of other designs. See your Thew-Lorain Distributor for details.

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A Big Difference — Designed Specifically for the Aggregate Field
The distinction is in its standout method of removing objectionable materials to meet the most rigid specifications.
Many deposits, formerly unusable because of coal, shale and other light weight particles, are today profitably operated with Wemco-Remer Jigs on the job.
The reason: exclusive Wemco-Remer Differential Acceleration — a combination of a conventional jig stroke with a high frequency stroke — and other features developed by operators for operators — to consistently answer the extra tough problems.
Get all the facts on the big difference of the Wemco-Remer Jig!
Depend on the Wemco-Remer Jig — and the skills behind it.
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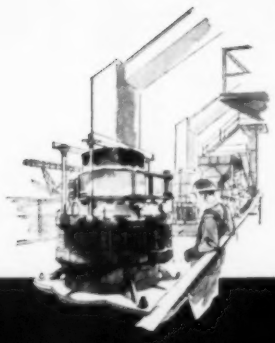
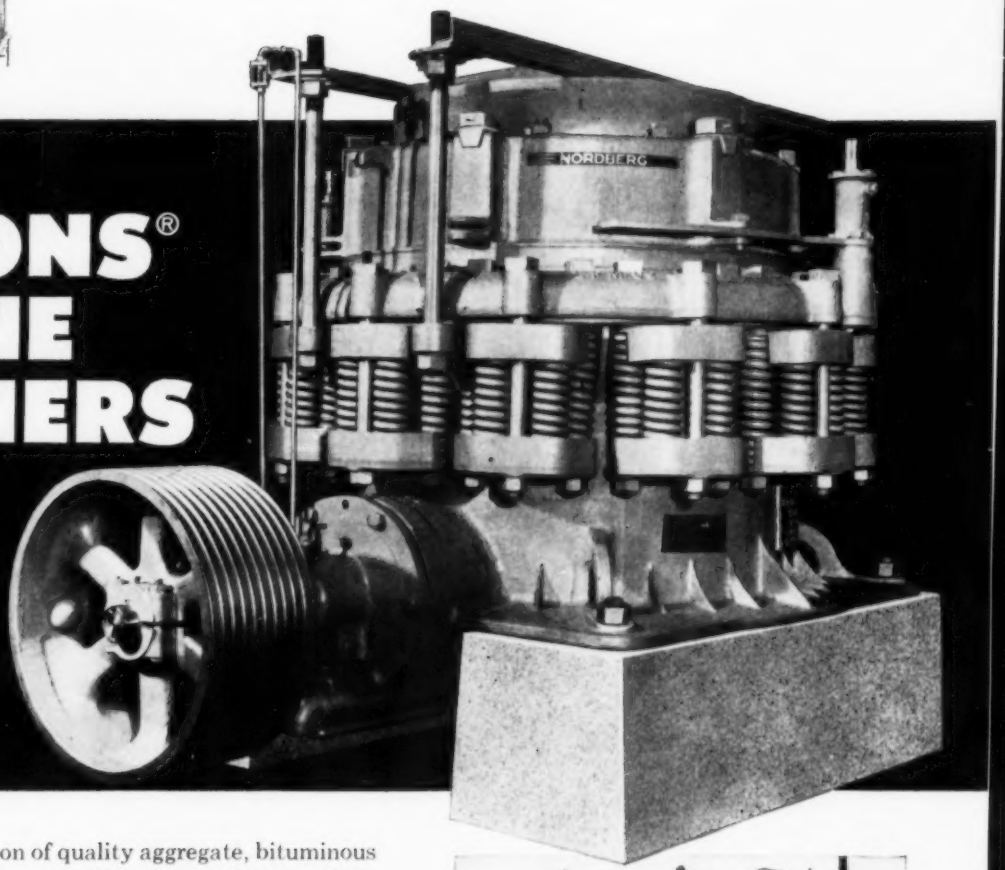


SYMONS® CONE CRUSHERS



For continuous production of quality aggregate, bituminous mixes and sand at lower cost—think first of Symons Cone Crushers—heavy duty, versatile crushers that produce more material to desired specifications, use less power, and give long service with low maintenance. Good reasons why these Nordberg built crushers are the outstanding choice of leading producers and contractors in the construction of highways, dams and hydro projects, bridges, as well as commercial and residential buildings.

Consult Nordberg soon . . . it will pay you to specify and use Symons Cone Crushers for both stationary and portable service. Write for descriptive data on Symons Cone Crushers—built in sizes to produce from 6 to 900 or more tons per hour.

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NORDBERG

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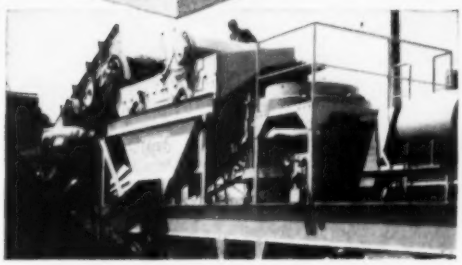
C-358



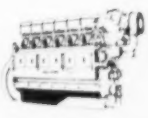
IN PORTABLE SERVICE

Increasing numbers of portable plant operators are now using Symons Cone Crushers for big capacity of fine product . . . such as the Cedarapids portable crushing plant utilizing a 4′ Symons Cone Crusher, shown above.

SYMONS GYRATORY CRUSHERS

SYMONS VIBRATING GRIZZLIES

SYMONS VIBRATING SCREENS



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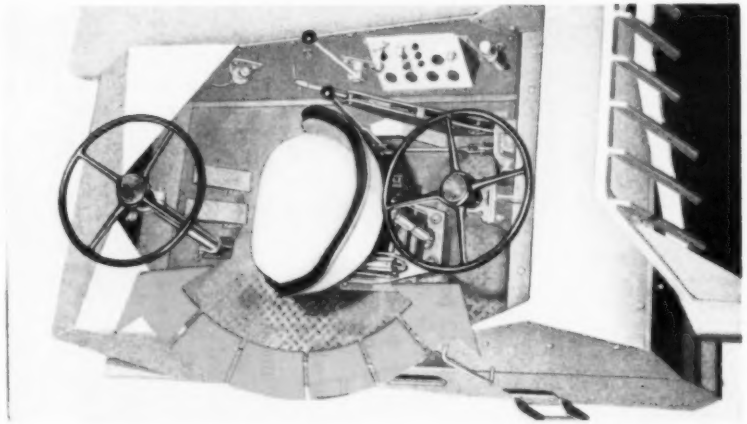
Now . . . a 10-YARD Dumptor®

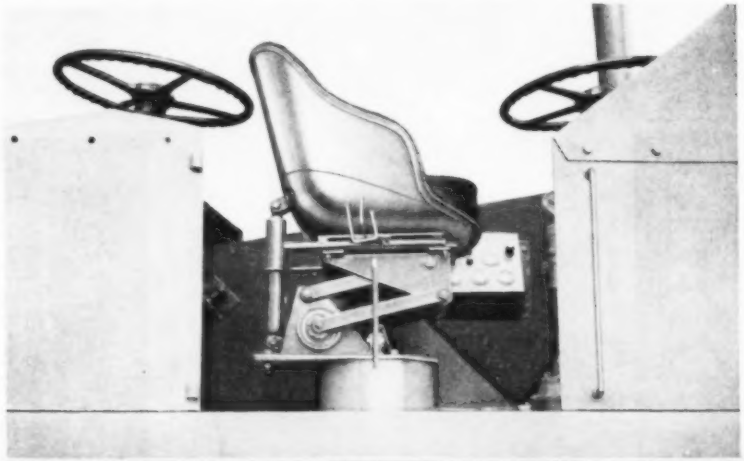
Meet the newest addition to Koehring® heavy-duty line . . . big 10-cu. yd. model 100 Dumptor with 30,000-pound payload capacity . . . 168 h.p. diesel engine . . . torque-converter drive . . . power steering.

PIVOTING SEAT . . . TWO-WAY CONTROLS . . .

for *no-turn* shuttle hauling



Operator always faces direction of travel . . . swings around *without leaving seat.* Pivoting seat with 2-way Dumptor controls let him operate with equal ease, comfort and safety in either direction.



- ***Here's a quick "preview" of new 10-yard Dumptor:***
- **Dual steering wheels, throttle, brake pedals located at both operating positions of pivoting seat.**
- **Directional travel and speed-range lever, and dump controls, centrally-located for 2-way operation.**
- **Constant-mesh transmission hydraulic clutches give full range of speeds up to 20 m.p.h. in either direction.**
- **Smooth torque-converter drive . . . power steering . . . big, safe, 4-wheel airbrakes, plus parking brake.**
- **2 ways to dump — *instantaneous*, with gravity . . . or *controlled*, with hydraulic cylinders.**
- **All-welded, multiple-ribbed body with rock-guards . . . bolted or free-swinging "kick-out" pan.**
- **Oscillating steering axle, center-pivot-mounted . . . heavy welded one-piece wishbone frame.**
- **Big drive tires eliminate need for springs on drive axle . . . *no spring maintenance.***

2 SIZES — In addition to this new 10-yard, Koehring also builds a smaller, companion-model 6-yard Dumptor. Both offer cost-cutting advantages you can't afford to miss. Why not call your Koehring distributor about them or write to us for information, today?

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New Rules Established For Expense Accounting In Federal Tax Returns

The issuance of final regulations by the Internal Revenue Service covering employee business expenses and excess accounts for income tax purposes, and a Revenue Ruling (58-453) on employee mileage and *per diem* allowances, have clarified much of the confusion created last Spring, when the Treasury Department first announced its intention to scrutinize more closely these points on individual and company tax returns.

A few changes have been made in the proposed regulations that were presented early this year. According to Commissioner R. C. Harrington, the revised regulations are more workable and equitable.

In brief, the new regulations provide that an employee who is required to account to his employer for his business expenses (and does so), will not be required to account either in total or in detail for such expenses on his individual tax return. However, any allowance received *in excess of expenses* must be declared in the return.

In contrast, an employee who is not required to account to his employer (or if required, does not do so) must declare on his tax return the total travel, transportation, entertainment, and miscellaneous expenses which he incurs under a reimbursement or other arrangement.

With respect to cases where reimbursement is less than expenses incurred, and a deduction for the difference is desired, the employee must furnish a statement showing *total* advances, reimbursements, or charges, and the *total* of his business expenses broken down into the categories listed above.

While an employee who is required to account to his employer (and who does so) will not ordinarily be called upon to substantiate expense account information, he will be asked to do so if the following conditions exist:

1. His expenses exceed the total charged to his employer and a deduction for the excess is claimed on his individual return.

2. He is related to his employer or is employed by a firm in which he or his family owns more than 50 percent of the stock.

3. The procedures used by the employer in accounting for such expenses are inadequate.

The recent ruling on employee mileage and *per diem* allowances provides that employees who are allowed fixed rates will be considered as having accounted to their employers, if the allowances do not exceed 125 percent of the rates allowed by the Federal Government (in the continental U. S.) for mileage and *per diem*.

The Federal Government's rates are 10 cents per mile and $12 per day, respectively. Therefore, if allowances to employees do not exceed 12½ cents per mile and $15 per day, the employee will be deemed to have accounted to his employer.

Special provision is made for those unusual cases in which an employee may be entitled to a higher mileage or *per diem* allowance than specified in the new ruling. In these instances, the employer may request a special governing ruling, and assumes the responsibility for establishing the reasonableness of such allowances.

If an employee's mileage or *per diem* allowances meet the requirements of Revenue Ruling 58-453, or are subject to a special ruling as an unusual case, he is not required to report such business expenses in his return unless deduction is claimed for an excess of expenditure over amounts allowed by his employer.

1959 Business Outlook Good: Poll Forecasts Upward Trend

The nation's leading economists are far more optimistic about the business outlook than they were this time last year, according to the survey conducted by F. W. Dodge Corporation.

They are also much more nearly unanimous in their opinions on major economic indicators than they have been in the past, according to George Cline Smith, Dodge vice-president.

Of the 212 participants, all but two economists expect gross national product to rise next year above its mid-1958 level, and all but four think industrial production will show a similar trend. On the average, they expect G.N.P. to reach an annual rate of $460,000,000,000 by the fourth quarter of 1959, a rise of about 4½ percent during the year. Similarly, they expect the Federal Reserve index of industrial production to reach 147 by December, 1959.

In general, the economists feel that inflationary tendencies will continue, with some speed-up in price rises toward the end of 1959. The median (average) forecast is that the government's consumer price index will reach 125.5 by the end of 1959, as compared with the most recently reported figure of 123.7.

While the economists clearly think 1959 will be a good year, Dr. Smith said, they recognize that there are hazards to be avoided. Among those most frequently mentioned are: (1) Inflation and runaway boom, with a counter-action some time after 1959; (2) possible cutting off of the recovery by excessive credit restrictions; (3) prospects for a relatively slow decline in the number of unemployed; (4) a continuing profit squeeze facing many businesses; (5) constantly rising wage rates; (6) rising government deficits, high taxes and restrictive tax structure.

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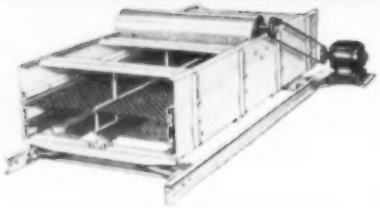

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■ One of the best guides to product performance is the record of repeat sales to recognized industrial leaders.

A large number of firms repeatedly specify Dracco Dust Control for new plant facilities or cost-cutting modernization programs. Typical examples are ten companies whose records are shown. All are among "The 500 Largest U.S. Industrial Corporations" listed by Fortune Magazine. Many have *standardized* on Dracco.

Implicit in these records are the superior performance, low maintenance and long service life of Dracco Dust Control Equipment. We invite you to judge our product "by the companies it keeps"—the other leaders in your industry.

Consult Dracco first on all problems of dust control or recovery.

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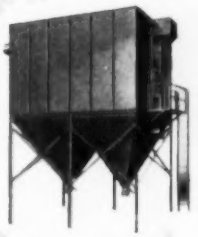
TYPICAL PURCHASE RECORDS* — 1948-1957
DRACCO DUST CONTROL EQUIPMENT
(we could have chosen many others)

TYPE OF COMPANY	NUMBER OF ORDERS	TOTAL DRACCO UNITS PURCHASED
chemicals	49	60
chemicals	13	28
chemicals	17	25
chemicals	14	19
refractories	35	54
refractories	8	27
mining	8	90
rubber	37	48
cement	15	31
stone products	14	15

*names on request

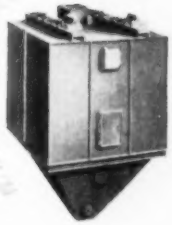


Multi-Bag Filters

Whirl-Clones

Dustomatic Filters

Uni-Filters



"DH" Filters

Complete 40-page catalog on Dracco Dust Control Equipment contains detailed data and valuable reference material. Write for Bulletin 800.

DRACCO *airstream* conveyors
dust control equipment

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WONDERWALL®

new name for the "toughness champ" multiwall made from Clupak* paper

Fertilizer, feed, cement, chemicals, seed, produce—everything that travels in a multiwall travels *safer* in a WONDERWALL.

This superiority has been proven in the lab and in the field. WONDERWALL bags perform better because they're made of tougher Clupak paper—the paper that stretches. It absorbs impact without failing where ordinary kraft paper breaks.

WONDERWALL bags measurably *reduce breakage*. Also, they pack faster, handle easier, stack firmly . . . and they cost no more than old-fashioned bags.

For better efficiency and lower costs specify WONDERWALL, the bag that's making ordinary multiwalls obsolete. On your next carload, order a trial shipment of 5000 and see for yourself.

*Clupak, Inc.'s trademark for extensible paper manufactured under its authority.

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NEEDS DEPENDABLE
NOURISHMENT *too!*
Take a tip from your family's dependence on "nature's most nearly perfect food". Coal is nature's most nearly perfect fuel. It's here in abundance for ages to come, a dependably low-cost and most efficient source of "go power"! It's convenient too —right on *Industry's* doorstep.
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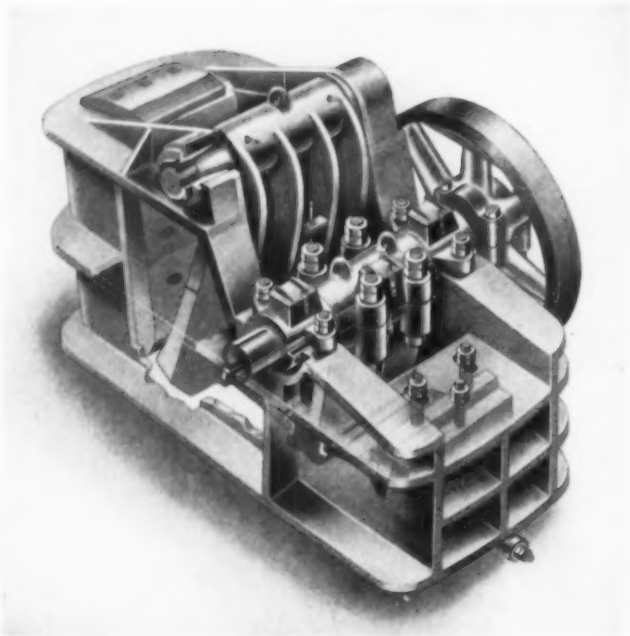
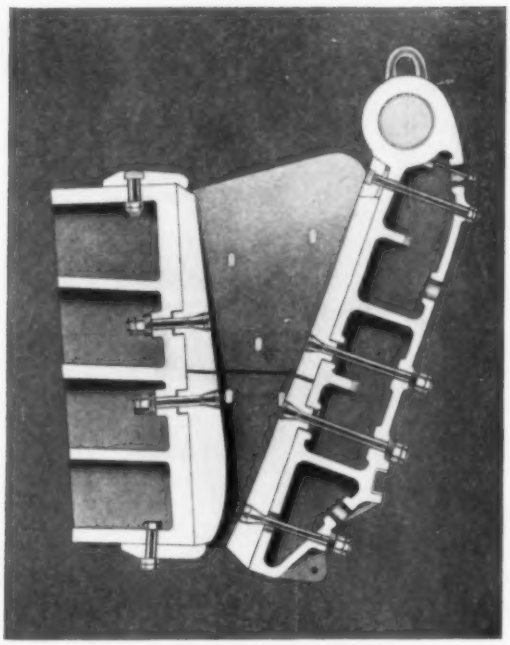
DESIGNED FOR HEAVY PRIMARY DUTY

Traylor-MADE TYPE H JAW-CRUSHERS

REDUCE CHOKING AND PACKING TO A MINIMUM



This cutaway view of the Type H Jaw Crusher shows clearly the sturdy welded frame, the strong pitman, the patented swing jaw suspension and the smooth face curved jaw plates.



Showing the famous Traylor curved jaw plates which reduce choking and packing, producing a finer product in greater capacity.

Traylor Jaw Crushers are in daily use in mines and quarrying operations all over the world. For complete information on the Traylor Type H Jaw Crusher, write for Bulletin No. 6105.

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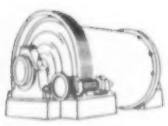
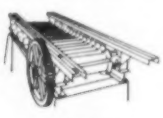
Sales Offices: New York — Chicago — San Francisco

Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P. Q.



BALL MILLS

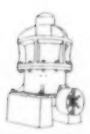
ROTARY KILNS



APRON FEEDERS

PRIMARY GYRATORY CRUSHERS

JAW CRUSHERS

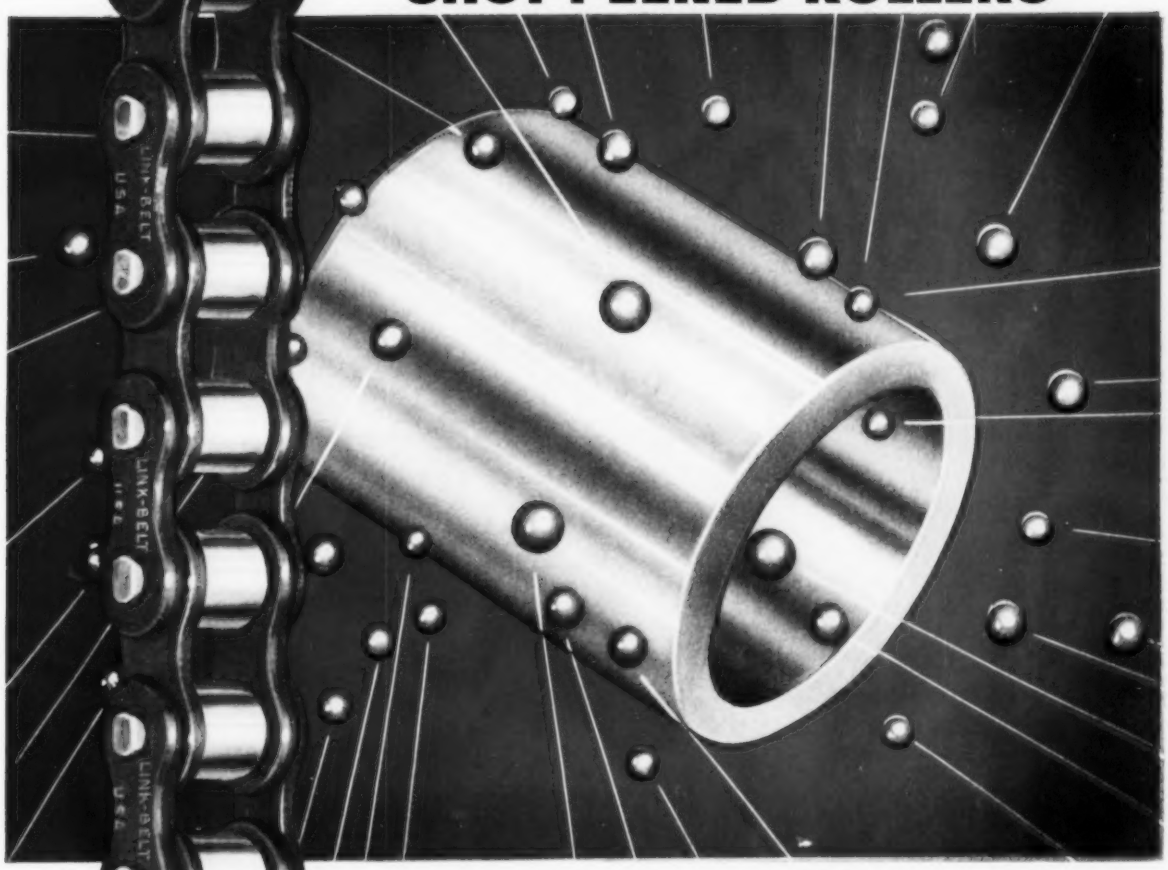


SECONDARY GYRATORY CRUSHERS

Shining example of "extra" chain quality

SILVER-BRITE

SHOT-PEENED ROLLERS



EXTRA LIFE IS POUNDED IN AND NOT POLISHED OUT

Rollers for Link-Belt precision steel roller chain are now finished by a special burnishing process to a "Silver-Brite" luster! And this is accomplished *without grinding away the benefits imparted by shot-peening*—a Link-Belt process that cold works the metal and provides extra fatigue life.

Many more special Link-Belt "extras" contribute to the dynamic strength so important for today's heavy loads and high speeds: close heat-treat control . . . lock-type bushings . . . pitch hole preparation . . . pre-stressing.

Ask your Link-Belt office or authorized stock-carrying distributor for new 154-page Catalog 2657—the most complete roller chain data book ever compiled.

LINK-BELT

ROLLER CHAINS & SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 15); South Africa, Springs. Representatives Throughout the World.

See how they work that

At this giant strip mine, the Tiger Brand Amerclad (shown in foreground below) is tortured by being dragged over razor-sharp rock and constantly pelted by flying fragments that are being blasted. It lies in the sun, rain and snow during the 24-hour workday.

Tiger Brand Amerclad

In wet or dry locations!

VERY FRANKLY, we do not make a range of Tiger Brand Amerclad qualities. When you see the Tiger Brand Amerclad mold identification on a length of portable cord or cable, you can be quite sure that nothing better can be purchased, no matter how much you want to spend for it.

The reason is that American Steel & Wire has catered strictly to the *heavy-duty* market where portable cord or cable is concerned. We're well aware that cable failure can be one of the most exasperating production difficulties that you can encounter. Expensive too, because nothing operates without power.

So the greatest care is lavished on Amerclad. Every inch of cable is vulcanized in a freshly cast lead sheath to insure a dense, tough, homogeneous sheath. Mechanical skimmers remove dross from the lead-melting pots, and the pots themselves are kept in an inert gas atmosphere to prevent formation of impurities.

The result is an amazingly tough and durable cable with precisely centered conductors that withstands mechanical abuse, water, oil, grease, gasoline, ozone, heat and cold. Ask your AS&W salesman for the story . . . and a catalog. Or write direct to American Steel & Wire, 614 Superior Ave., N. W., Cleveland 13, Ohio.

USS, Tiger Brand and Amerclad are registered trademarks

The workman is holding an electric concrete tamper that knocks the entrapped air out of the mix before it sets—giving a denser, stronger concrete. The tamper is equipped with Tiger Brand Amerclad. It's dragged through wet concrete, over piling and beams, run over by trucks. Yet the manufacturer says he has never had a complaint about the cable.

Tiger Brand Electrical Wire & Cable

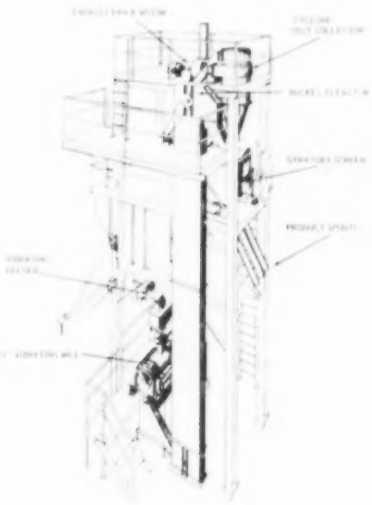
Asbestos Wire and Cable • Mold Cured Portable Cord • Shovel & Dredge Cable • Paper & Lead Cable • Varnished Cambric Cable
Interlocked Armor Cable • Special Purpose Wire & Cable • Aerial, Underground and Submarine Cable

American Steel & Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad

New Machinery
and Equipment

For Further Information Use Card on Page 105



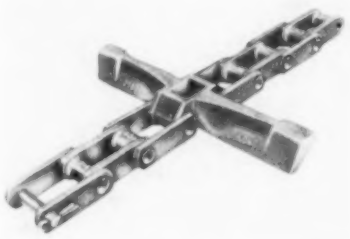
● A pre-engineered dry grinding plant is now available from the Allis-Chalmers Manufacturing Company as a package unit, consisting of a vibrating mill and all auxiliary equipment. The unit is designed to deliver finely controlled product sizes at capacities up to 1 t.p.h. Substantial holding bins and variable speed elevator and feeder make it possible to handle dry feeds ranging from 30 to 300 lb./cu. ft. Dust collection is provided at all necessary points.

Main components of the new plant have been selected and arranged within a rigid steel structure to provide operators with a well balanced circuit with less floor space requirements. Utilizing only 127 sq. ft. of floor or ground space and relatively low head room, the dry grinding plant can be readily installed in an existing building.

Plant design allows each circuit component to do the specific, single operation for which it was intended. For example, the vibrating mill is used only for grinding. Product classification is accomplished in the A-C gyratory screen. **(351)**

● A stronger flight design and greater chain strength are featured in the improved Superflite No. 4452 12 in. conveyor chain introduced by The Long Company.

According to the manufacturer, the No. 4452 has an average ultimate strength of 27,000 lb. Extra strength is provided by an increase in depth of 1/16 in. in the heat-treated chain sidebars plus the use of special heat-treated malleable iron. In addition, it is claimed that the new rugged flight construction makes possible easier assembly, will



last longer, and improves conveying efficiency. In this design the flights stay straight and run free even when used for extra heavy service. **(352)**

● Two new models have been added to the *Lima* line of power shovels, cranes, draglines, and pullshovels manufactured by the Baldwin-Lima-Hamilton Corporation.

The Type 64 has a rated capacity of 40 tons when equipped as a crane. When equipped as a shovel, it has a 22 ft. boom, 17 ft. dipper handle, and 1¼ cu. yd. dipper. Changeover from shovel to crane, dragline, or pullshovel is easily made in the field.

The Type 64-SC is designed for special crane service and has a rated capacity of 50 tons. The boom is built in two sections with provisions for adding 10, 20, and 40 ft. lengths to extend the boom to 150 ft.

The Types 64 and 64-SC have identical truck bases. Two widths of axles and two lengths of crawler side frames are available. Standard crawler is 13 ft. 3 in. long and 10 ft. 8 in. wide with 30 in. treads. For special service, requiring an extra long, wide crawler, a 17 ft. 1½ in. wide crawler with a spread of 14 ft. and 42 in. treads can be furnished.

Gasoline, diesel, or electric power with torque converter provides ample power for hard digging. **(353)**

Enter 55 on card, page 105 →

YOU CAN TAKE IT WITH YOU

EAGLE'S MODEL 6600 PORTABLE JAW CRUSHER

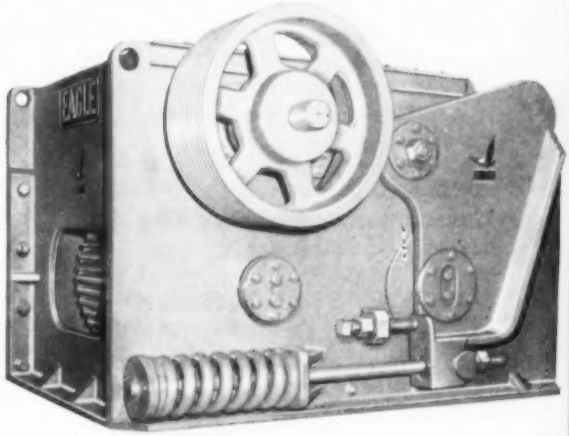
Helps you make more of that green stuff you *can't* take with you. Nearly every contractor knows that to meet today's rapidly sprawling road system *it's important to be portable.*

Eagle is keeping up with the changing times. Note, for example, on this single pass gravel plant the newly designed *low hopper* for front end loaders. Available in four crusher sizes—capacities from 40 yds. per hour on 1" material up to 220 yds. per hour on 2½" (based on crushing approximately 25% of the pit run gravel).

Can you afford not to be mobile in today's market? Our engineers keep their bags packed—ready to help you analyse and economize. Write today! Phone collect—Galion 2830-1—we're ready! (Specifications for the asking.)

EAGLE CRUSHER CO., Inc. GALION OHIO·U·S·A

JAW AND ROLL CRUSHERS, PORTABLE PLANTS, CAGE AND HAMMERMILLS, CONVEYORS, LOADERS

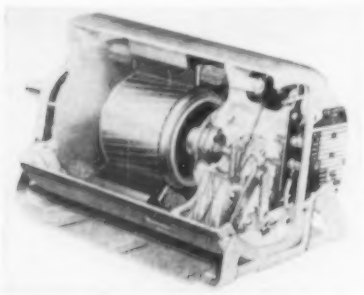


NEW... EAGLE'S ROLL CRUSHER

Ever think a crusher would look this good? Well, this one does! It's Eagle's new Roll Crusher. And performance is right in step with its looks, too! Roller bearings throughout. All steel cut gears running in oil. Two sizes—24 x 20, 30 x 24. Send for complete specifications—engineering help!

● Totally enclosed controls are featured in the new line of single phase motors being introduced by the Electric Motor Division of the A. O. Smith Corporation.

Complete containment of the switch, capacitor, thermostat, and terminal board makes these critical parts completely impervious to dirt,



dust, oily accumulations, and processing material fines, ending contamination-caused faulting of starting switches. Design of the switch package capsule allows inspection and checking of the switch without damaging the container's protection efficiency.

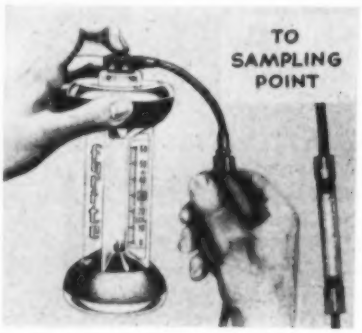
The new life-protected starting switch design is being adapted to every model in A. O. Smith's single phase motor line. The motors are being released in rigid base designs from ¼ hp. through 1½ hp. in the 56 frame and totally enclosed switch construction on blower motors in the 56 frame from ⅓ hp. through 3 hp. All motors feature life-lasting pre-lubrication.

Other features include pre-lubricated ball bearing construction. A locked bearing arrangement assures constant, even transfer of power from motor to driven machine with mimimum power loss. This also reduces belt, pulley and bearing wear on the driven machine.

Cutaway above shows capsule inside end-bell, with phantom of capacitor. Capsule contains sealed switch assembly, starting capacitor, thermostat, terminal board—protecting them from air stream. Starting switch has self cleaning scissor action "anti-carbonization" alloy contacts and is actuated by governor through nylon button. The distance between bearing centers has been reduced, improving concentricity and minimizing electrical noise. (354)

● Davis Engineering's HydraXcavator crane is a fully hydraulic unit featuring a 360-deg. unlimited swing and rapid interchangeability of boom end attachments. In minutes the backhoe bucket may be exchanged for a shovel bucket or a full hydraulic clamshell. Elimination of cables and brakes makes for ease of operator training. Simple positive hydraulic controls are hand operated.

Also available is a new extended range boom which permits digging to depths of 13 ft. 6 in. At the same time, due to the full swing feature and the high reach of the unit, material removed from the excavation may be easily loaded aboard high sided trucks or in spoil piles alongside the excavation. (355)



● Bacharach Industrial Instrument Company has expanded its line of portable Fyrite gas analyzers to include an instrument for measuring 0 to 60 deg. carbon dioxide. This range is particularly suitable for measuring CO_2 in the exhaust gases of kilns in the manufacture of cement and allied materials and in heat-treating atmospheres. Gases up to 850 deg. F. may be treated with this Fyrite instrument without the need for special cooling means.

The Fyrite employs the "Orsat" method of volumetric measurement, involving absorption of the gas sample by a chemical absorbent. It is supplied with gas sampling equipment which is used to pump an atmosphere sample into the instrument while it is held in the hand. Absorbing fluid mixes with the atmosphere sample. Absorption of the CO_2 in the sample creates suction which draws the absorbing fluid up into the instrument's graduated measuring tube in an amount equal to the carbon dioxide absorbed. The level of the fluid indicates the CO_2 percentage in the atmosphere tested. (356)

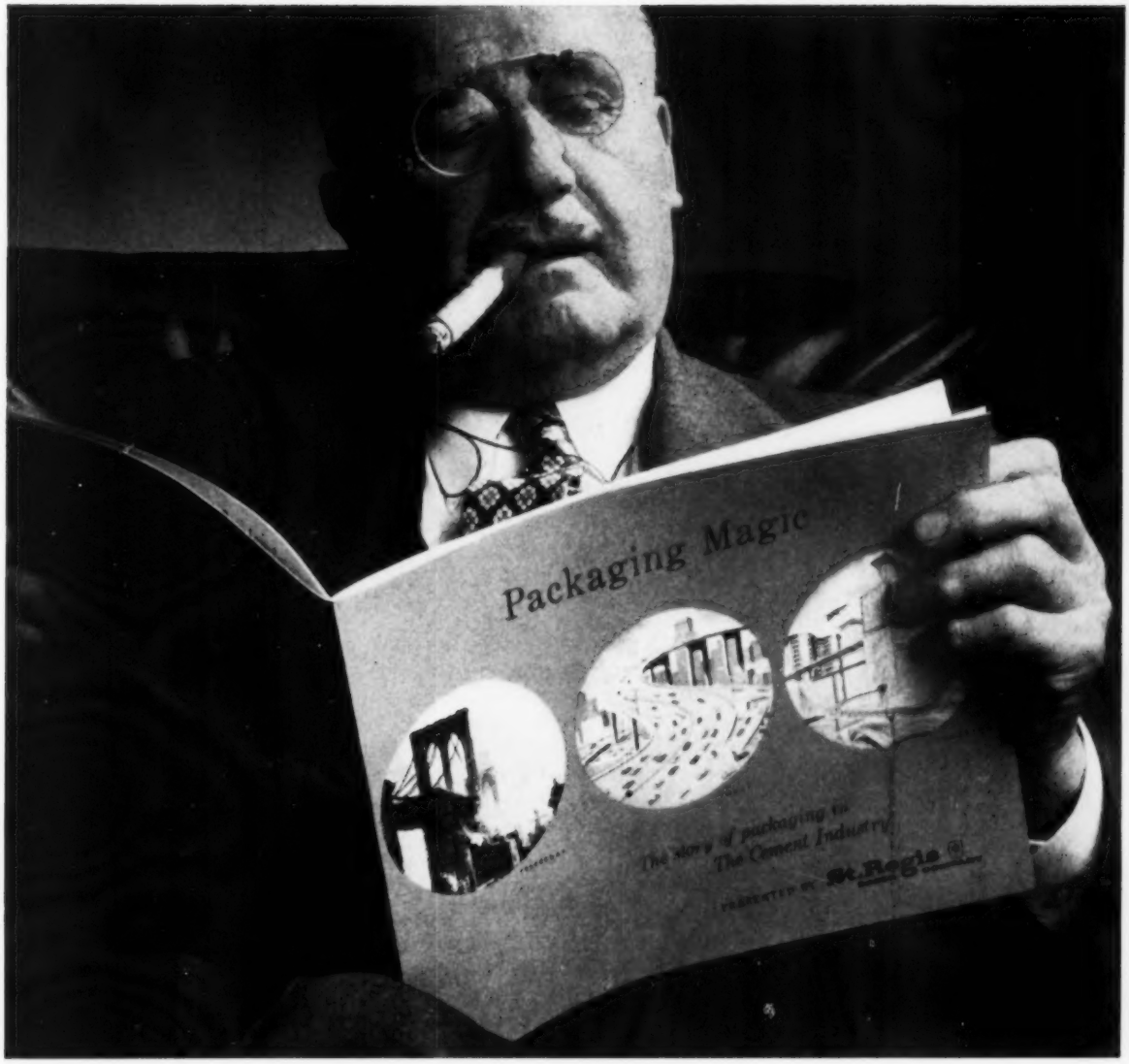
● A new group of heavy-duty dragline buckets in 3, 4, and 5 cu. yd. sizes has been added to the line manufactured by the Williams Bucket Division, Wellman Engineering Company.

All buckets have arch and lip built from heat-treated T-1 steel for superior strength and wearing qualities. Chains are of heat-treated forged alloy steel.

The 3 cu. yd. model weighs 6,700 lb., compared with the standard 3 cu. yd. Williams dragline which weighs 5,875 lb. The 5 cu. yd. model weighs 11,000 lb.

Other features of the standard line, including full-length patented welded stiffeners, reversible manganese alloy steel teeth, and adjustable hitch connections, are all retained. All wear points are protected by skid bars and wear plates.

Lengths of the new line range from 20 ft. 4 in. for the 3 cu. yd. model to 28 ft. 8 in. for the 5 cu. yd. model. (357)



Required Reading

If you're interested in the packaging of cement, you'll want to read "*Packaging Magic*"—the new booklet that's now available for the asking. St. Regis—pioneer in packaging progress for the cement industry—prepared this interesting, fast-moving, illustrated book with the help of many leading cement producers.

In its pages, you'll find the complete story of cement packaging—past, present and future. You'll learn interesting facts from the old days. You'll see how cleaner bags and closer weight control became today's reality. And you'll find the marvels of packaging St. Regis is planning to bring you tomorrow.

We know you'll find this new booklet "required reading." For your copy, write today to Multiwall Packaging Division, St. Regis Paper Company, Dept. PQ-1258, 150 East 42nd Street, New York 17, New York.

MULTIWALL PACKAGING DIVISION

St.Regis PAPER COMPANY

150 EAST 42ND STREET, NEW YORK 17, N.Y.

● The Detroit Diesel Engine Division of the General Motors Corporation has added to its line a new Series 110 Model in which a 20 percent increase in horsepower is attained through turbocharging. According to GM engineers, the increase in horsepower from 300 to 360 is attained with no appreciable increase in bulk, weight, or fuel consumption. An exhaust-driven turbine driving an air impeller works with the engine blower to increase the fresh air supply to the cylinder. The result is improved combustion and greater efficiency.

Available with base and radiator as well as a fan-to-flywheel unit, the new 6-110T has been developed for portable and stationary applications requiring a comparatively small, lightweight unit of high power output. (358)

● Diamond T Motor Truck Company's 8-wheel tilt-cab diesel, Model 923C-36M, has an unusually low chassis weight despite its "tandem-tandem" construction. It weighs only 20,600 lb., including a 17 ft. dump body of 18½ cu. yd. capacity, completely ready for the road.

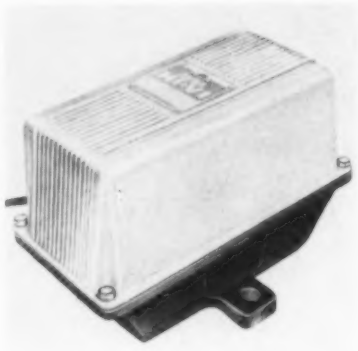
Aluminum is used liberally throughout the entire unit. Cab, frame, crossmembers, fuel tanks, engine flywheel housing, gear cover, oil pan, and other elements are constructed of the weight-saving metal. The dump body is fabricated of Alcoa aluminum.

The unit is powered with the recently-introduced Cummins NH-180 diesel engine, which develops 180 brake horsepower and 450 lb. ft. torque.

The sturdy frame of the 8-wheel vehicle is constructed of heat-treated alloy steel. 5/16 in. full-length inner-liners provide added strength. (359)

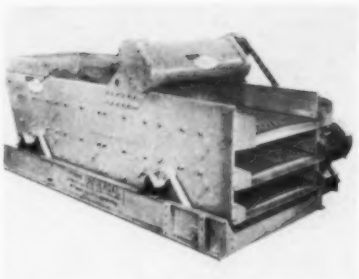
● Eriez Manufacturing Company has added to its line of V3B unit vibrators two new impact and semi-noiseless models for bins, chutes, hoppers, etc., with wall thickness not exceeding 3/16 in. and a capacity of 20 cu. ft.

Controls are not necessary, but when they are used, the performance



of the Hi-Vi vibrators can be adjusted easily to match day-to-day variations in product or loading conditions. The simple a.c. control unit consists primarily of a wire-bound potentiometer with suitable switching and connection means.

The semi-noiseless model is also available specially designed for hazardous, dusty locations. (360)



● Universal Engineering Corporation announces production of the new Screen Master horizontal vibrating screen equipped with phasing-bar and air-spring system and rubber bushings for smoother, aggressive action and greater capacities.

Phasing bars and air springs replace conventional springs. Aggressive action is obtained as all parts, basket, screen wire, and phasing bars act in unison (or in phase), preventing blinding and blanketing of material on screen wire.

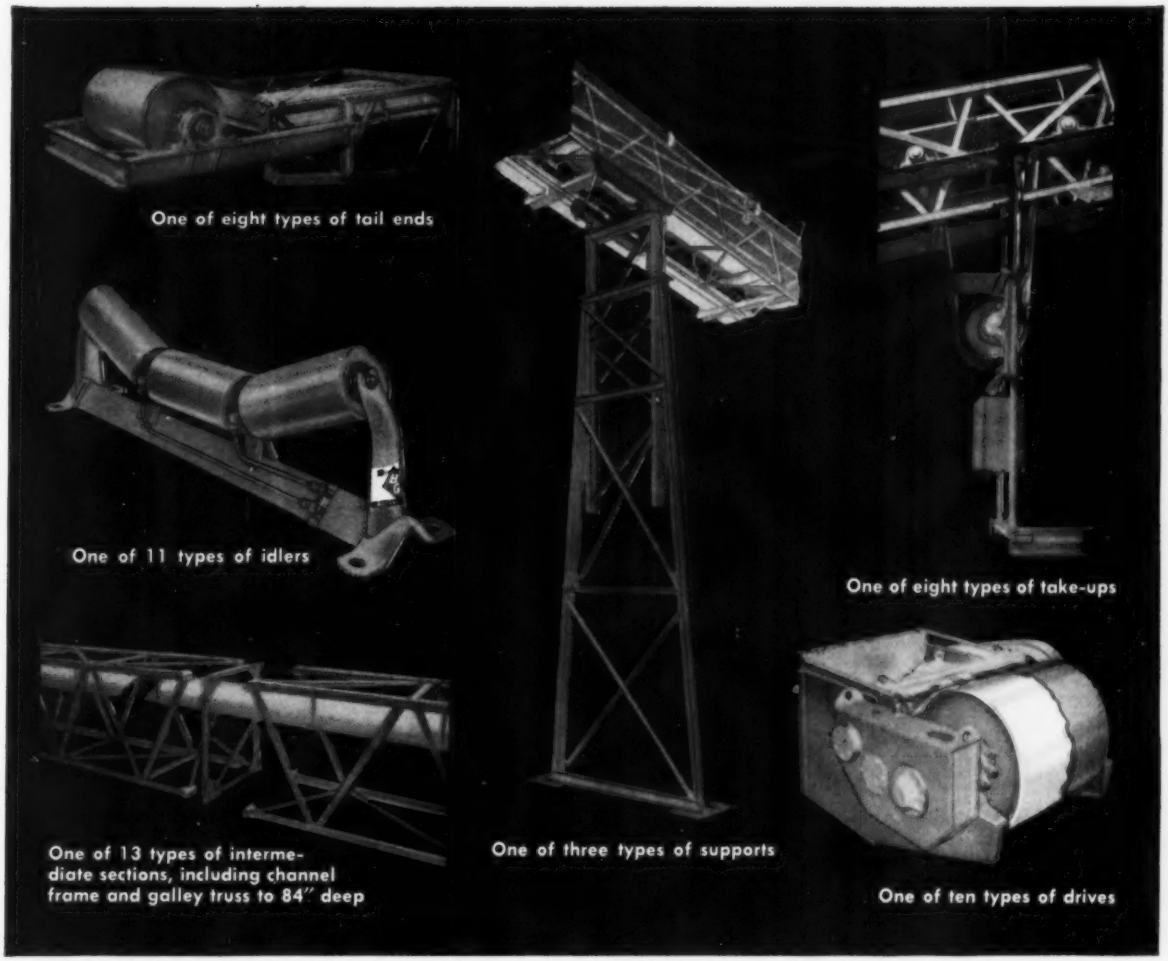
The Screen Master has full screening area for greater capacities. A 4 x 12 screen has full 48 sq. ft. of screening area. Additional features are an extra-heavy vibrator unit, which gives greater power to meet all feed and screening conditions, and interchangeable parts. (361)

● Made entirely of F-1 steel, Athey Products Corporation's 40-ton bottom dump trailer, the PW20, has an empty weight of only 22,500 lb., a capacity of 80,000 lb., and a vehicle weight to payload ratio of almost 4:1.

The rear door opens simultaneously with the bottom doors and permits material to flow smoothly to the rear. In addition to this new door design, the rear axle clearance is a high 5 ft. to allow the trailer to ride out over the dumped load.

Matched to the Capterpillar DW20 tractor, the unit has a top speed of 35.8 m.p.h. and a turning diameter of 38 ft. 4 in.

Instant or controlled dumping is another feature of the PW20. An air release opens the doors instantly or under hydraulic pressure for controlled dumps. When closed, the doors are locked with a positive mechanical latch which relieves the hydraulic system of all load. (362)


One of eight types of tail ends
One of 11 types of idlers
One of 13 types of intermediate sections, including channel frame and galley truss to 84" deep
One of three types of supports
One of eight types of take-ups
One of ten types of drives

Pictured here are just a few of the many Barber-Greene standardized conveyor components. Each is available in a wide variety of types and sizes, with unmatched flexibility for countless ways of assembly. Write for new bulletin.

Boost conveyor efficiency and cut costs with Barber-Greene standardized components

Every year, more and more belt conveyor installations — long and short, simple and complex — are made up of Barber-Greene standardized, "packaged" components. This standardization means fast, off-the-shelf delivery . . . almost limitless combinations of assembly that cut time and costs on any bulk material handling job . . . components completely interchangeable . . . spare parts readily available . . . simple selection and pricing right from the catalog. Light or heavy, Barber-Greene has the complete conveyor installation you need.

You save these six ways:

- You save special engineering time and expense.
- You save delivery time.
- You save erection time and expense.
- You save on alignment.
- You save on replacement costs.
- You save down time.

58-34-PE

Barber-Greene BG

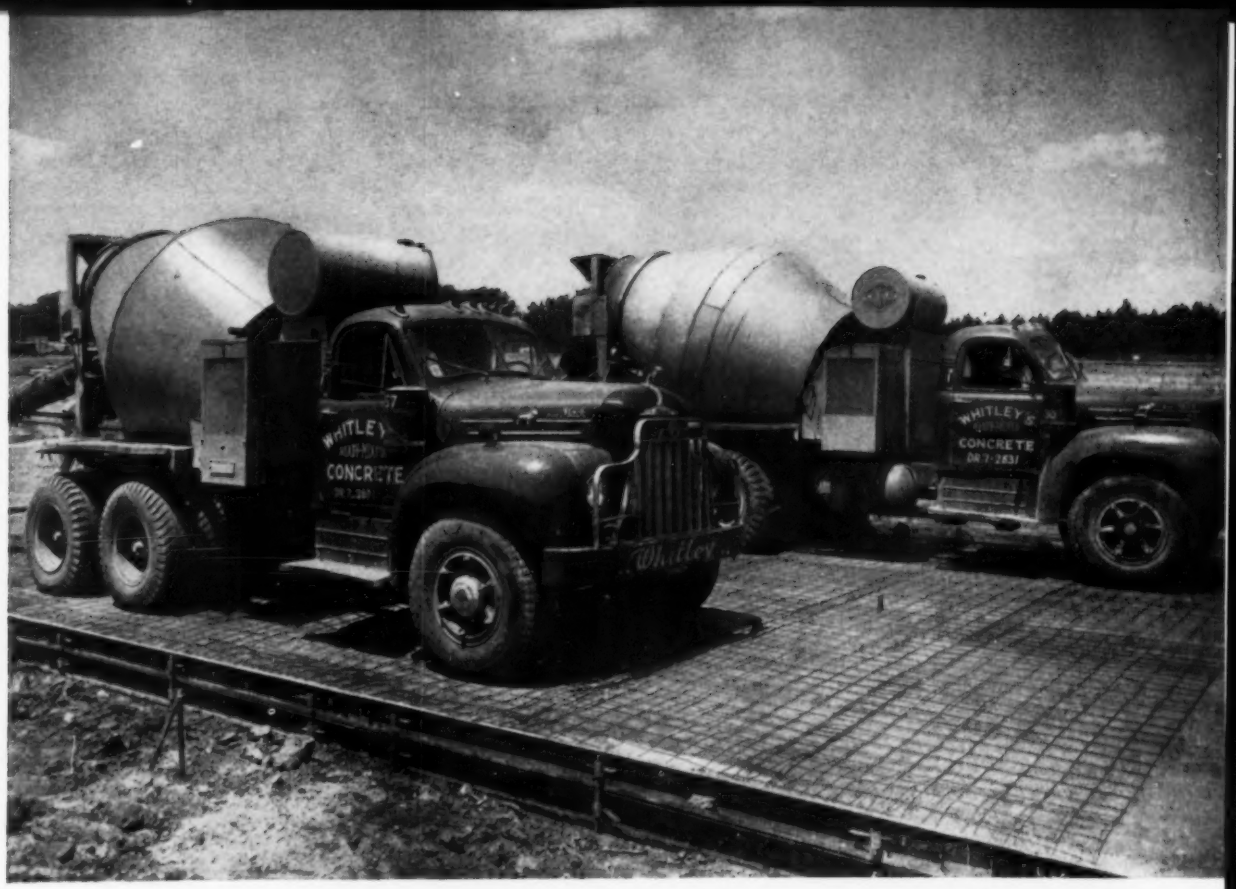
AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

"Our 33 Macks are the main reason why we are able to give our ready-mix customers the best possible service at the least possible cost," says Mr. Grover Whitley, president of Whitley Construction Co. of Decatur, Georgia. Adds Mr. Whitley, "The extra strength and low maintenance built into

Macks have significantly

Whitley has eight of these 4-wheel Macks with 4-yard mixers for use on its smaller jobs, such as this residential construction. These Macks perform so economically and stand up to wear so well that Whitley has four more on order.



Two of Whitley's 25 Mack 6-wheelers pouring concrete at roadway construction site. Each of these Macks carries a 5½-yard mixer. Whitley has found that Macks carry these back-breaking loads with ease and dependability, at minimum operating cost.

reduced operating costs...

"Beating the problem of high operating costs was impossible for us until we bought our eight Mack 4-wheelers with 4-yard mixer bodies," says Mr. Whitley. "In past years, we have used all makes of trucks in the lower price class for use on the smaller jobs, but maintenance and operating costs were excessively high.

"Our business furnishes concrete for residential and commercial construction, which involves our trucks in both heavy city traffic and off-highway travel. Steep grades are frequently encountered, and on foundation pours the terrain is often very rough and the mud deep—conditions which do not make for low-cost operation.

"Yet, with an annual mileage of 30,000 miles (an average of eight trips per day), down time is negligible, maintenance is low, thanks to Macks' superior construction. For profitable operation, these Macks top all our other trucks. In fact, we believe that our reduced costs of operation are due mainly to our use of Macks!"

* * * *

For the large pours, Whitley Construction Co. operates 25 Mack 6-wheeler mixer chassis, again with top operating economy and little down time. The extra strength built into the chassis and sheet metal of all Macks pays dividends in extra years of service that no other truck can equal.

If you are looking for equipment that can substantially reduce your operating costs, let your Mack representative show you why Macks are the cheapest in operation and require the lowest possible maintenance costs. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

5346

Enter 60 on card, page 105

"13 Years Without a Single Lubrication Failure!"

Hausz Brothers, Inc. credits Cities Service

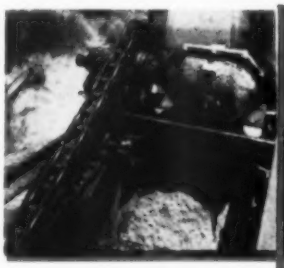
When you can operate a crushing plant, redi-mix plant and 14 pieces of mechanized equipment for thirteen years without lubrication failure—mister, you're doing something!

No one knows this better than Hausz Brothers, Inc., of Fort Atkinson, Wisconsin—for that's their record.

"But it's more than just our record," says Carl Hausz. "It's a record belonging to Cities Service, too, for we've used nothing but Cities Service fuels and lubricants during the entire 13 year period.

"Currently, we use Cities Service C-300 and C-500 motor oils, Trojan MP gear oil, and multi-purpose Trojan H-2 grease, as well as Cities Service gasolene and diesel fuel. We couldn't be more satisfied with the results."

As with Hausz Brothers, satisfaction is a characteristic of Cities Service customers. If you're not completely satisfied with your present fuels and lubricants, talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

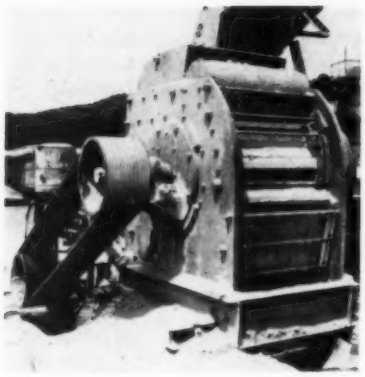


Neither Sand nor Snow nor rain nor hail stops Cities Service lubricants from doing their job. Close-up of crusher typifies conditions under which they give flawless lubrication.

Often used 9 hours a day, Hausz Brothers' equipment takes terrific work load. One reason is because Cities Service oils and greases take the lubrication load.

CITIES SERVICE

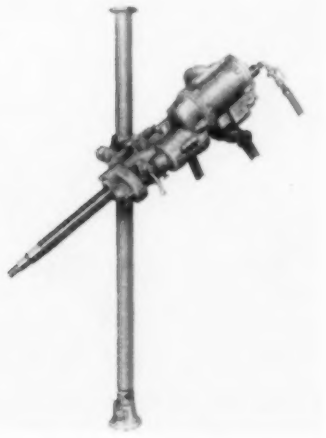
QUALITY PETROLEUM PRODUCTS



● Latest addition to the line of hammermills manufactured by Day Pulverizer, Inc., is this No. 90 Model DR 36 x 36 pulverizer, offered in capacities from 60 to 200 t.p.h.

The No. 90 hammermill is completely lined on the inside and contains manganese steel hammers and breaker plates. The four-corner hammer which swings from either end or side is a new design feature. The unit contains six hammers, two per rod, weighing 165 lb. each.

The 16 x 36 feed opening has been proven effective for reducing many materials down to fine particles. (363)

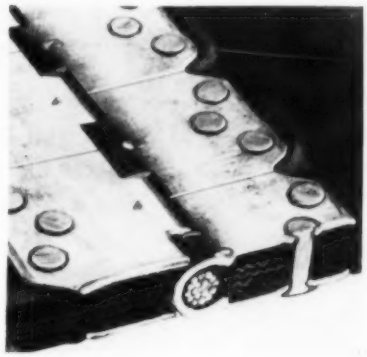


● A new and powerful diamond drill is announced by the Chicago Pneumatic Tool Company. Designated the CP-65, this unit is recommended for blast hole, coring, or grout hole work. It is capable of drilling to depths of 600 ft. with ordinary mine air pressures.

The motor has been made reversible for greater speed in blast hole drilling operations, making for rapid unscrewing and screwing of rod joints. Reversibility also permits the chuck to be moved quickly into drilling position.

Fully enclosed, the CP-65 is a dust-proof and oil-tight unit. Four sets of feed gears, any one of which may be engaged without stopping the drill, give a wide selectivity in the rate of feed and enable the operator to take full advantage of ground and bit conditions. In addition there are six alternate feed gears that provide further refinement in feed control for unusual formation conditions.

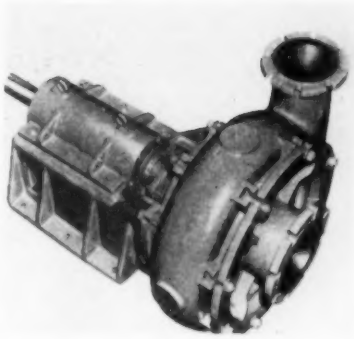
The CP-65 mounts on a standard rock drill saddle and works in any position from a column, arm, or crossbar. The complete drill with a built-in swivel head is only 42½ in. long, weighs 200 lb., and handles with the facility of a drifter. (364)



● An easy-to-use, high-strength flexible lacing for troughed conveyor belts has been developed by the General Splice Corporation. The splice is available for belts from $^{3}/_{16}$ to ¾ in. thick and up to 60 in. wide.

Designed for quick, simple installation, the hinge-type Minet splice eliminates the need for templates, drilling, or hole punching. Design permits the installation of the splice in one piece. As the conveyor operates, the hinge plate separates into sections at pre-scored notches to conform with conveyor trough curvature. The one-piece design assures a close fit, which results in a flexible joint that is tight and leak-proof.

The hinge-type splice with heavy duty, reusable cable pin, can go smoothly around small diameter pulleys and makes adding and removing belt sections a quick, simple operation. (365)



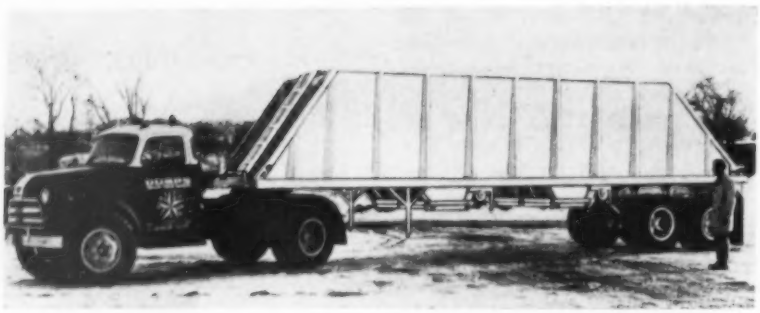
● Morris Machine Works has added a new type CK solids pump to its line of heavy-duty slurry pumps.

As a heavy-duty low-speed centrifugal pump, the Model CK is designed especially to handle fluids containing random size solids and highly abrasive materials. For example, the 6 in. pump efficiently handles 4⅛ in. solids. Manufacturing specifications indicate this pump to be ideal for dredging as well as slurries comprised of sand, tailings, gravel, lime, process wastes, and other abrasive mixtures.

The model CK is available in five sizes—4, 6, 8, 10, and 12 in. (366)

● This Caterpillar D9 tractor with a No. 9 ripper is designed for breaking and removing very hard overburden materials. The 320 hp. D9 tractor supplies up to 63,000 lb. of drawbar pull to move the steel ripper tooth through tough material at depths of 28 in.

Because it is directly mounted on the tractor, the ripper concentrates most of its weight and that of the tractor on one point—the tooth tip. In addition, mounting the ripper directly on the tractor enables the unit to use the D9's traction to the best advantage (367)



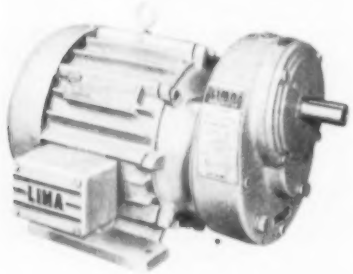
● A new all-aluminum, two-compartment bottom hopper dump trailer with a 33-cu. yd. capacity has been introduced by the Lodestar Corporation.

Design of the trailer includes features to provide increased vertical and lateral strength, minimizing deflection. As a rigidity feature, the side panels are formed from a one-piece solid aluminum plate, incorporating heavy-duty rub rails, supporting tapered pyramids flared to cover a large area of the rub rail, and boxed and capped upper flange.

The hopper doors can be operated manually, or are available for air or hydraulic operation. The doors are cable controlled with spring loaded crosshead shafts, counter balanced for easy closing. The doors can be mounted across the width or along the length of the trailer body. **(368)**

● The Lima Electric Company, Inc., has added a complete range of sizes of gear-motors to its present line of Selective-Speed gearshift drives and industrial electric motors.

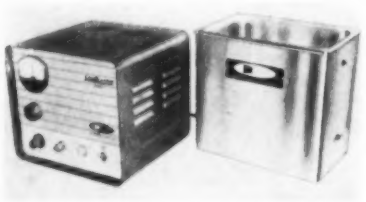
This new line consists of single, double, and triple reduction units, integrally motor mounted. Motor capacities are rated from 1 to 125 hp. with output reduction speeds



from 780 to 7½ r.p.m. They are adapted for horizontal foot mounted applications.

Designed to meet almost any service requirement, Lima gearmotors are available in standard open Drip-proof construction for general purpose use; totally enclosed fan-cooled for dusty or high humidity atmospheres, and explosion proof for hazardous locations.

Standard electrical characteristics of Lima gearmotors are normal torque, 3 or 2 phase, 60 cycle, 208, 220/440 or 550 v. **(369)**

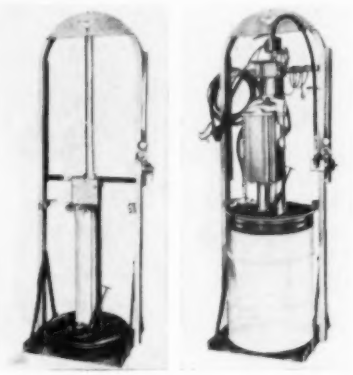


● Equipment for the ultrasonic cleaning of fine mesh screens has been developed by the Narda Ultrasonics Corporation.

Ultrasonic cleaning is the application of high-frequency vibrations to a container of liquid. The compressive and decompressive pulsing of the transducer beneath the tank creates bubbles of submolecular size which collapse and force contaminants from the surface of the objects to be cleaned. The minute bubbles penetrate the smallest crevices of interfaces, leaving all surfaces unmarred, and both physically and chemically cleaned.

The Narda SonBlaster is available in many sizes. The unit pictured consists of a generator which is actuated by a conventional on-off switch and a tank with integral transducer which converts incoming current to frequencies of 60,000 or more cycles. Narda's stock model unltrasonic cleaners range from the size of a table radio to giant 150-gal. capacity tanks. **(370)**

● Lincoln Engineering Company is offering a new air-operated pressure primer, the Dyna-Ram, and a new air-operated forced induction pump, the Pile Driver, as part of its new line of industrial lubrication equipment.



In addition to the usual fluid materials, these pumps handle extra-heavy lubricants and non-flowing compounds.

The Dyna-Ram is especially suited for use with the new line of Lincoln Power Master air-motor operated drum pumps. Special features listed by the company include ease of operation, rugged steel construction, and jam-proof operation.

The Pile-Driver is a maximum power unit designed to pump even the heaviest materials. **(371)**

● Designed for intermittent applications and for light uses of the Arcair process, the new Model H-2 is the Arcair Company's smallest manually operated torch. It incorporates several improvements over the model G-2 which it replaces.

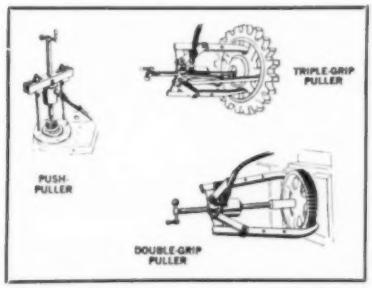
An important feature is a positive air control valve in the torch handle. By holding the air orifice in the head of the H-2 within 4 in. of the work, this new metal removal torch can be operated on as low as 40 p.s.i. of compressed air. **(372)**

● An expanded line of Flexidyne dry fluid drives and couplings ranging in capacity from ¼ to 1,000 hp., is announced by Dodge Manufacturing Corporation.

Three larger sizes and a new small size for low horsepower applications have been added. An 18-in. diameter Flexidyne is now available either as a drive for use with V-belts, or as a coupling for direct shaft-to-shaft connection. Either will deliver up to 200 hp. at 1,200 r.p.m. Next larger size is the 22CK, available only as a coupling and capable of transmitting up to 800 hp. at 1,200 r.p.m. Largest of the new units is a 27-in. coupling, 27CK, with a horsepower rating of up to 1,000 at 900 r.p.m.

Among applications of these new larger sizes are conveyors, fans, processing machinery, mixers, pumps, crushers, and pulverizers.

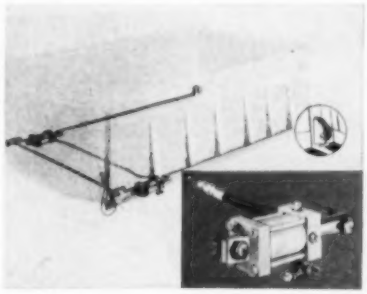
For medium light applications such as cranes, fans, and small conveyors, the manufacturer has added a 6-in. Flexidyne. This unit, available as a coupling or for use with V-belt drives, is rated at up to 2 hp. at 1,800 r.p.m. (373)



● Templeton, Kenly & Company has added a new series of pullers (double and triple-grip), push-pullers, and attachments to its Simplex line of hydraulic jack equipment. These units are available separately or complete with Re-Mo-Trol hydraulic center-hole rams and pumps in 20- and 30-ton capacities. They are specially designed for removing and installing gears, pulleys, wheels, bearings, bearing sprockets and cups, and axles. Attachments include a special bearing puller and bearing cup puller engineered for use where double or triple-grip pullers will not fit, or for pulling from blind holes in cramped quarters. (374)

● Hydraulic equalizing cylinders installed in the tail gate tie-rod assembly of dump trucks assure complete load protection and greater safety, according to Mo-Bar Hydraulics, Inc.

The pair of equalizing cylinders is connected to the tie-rods and is



adjustable to exert even pressure of up to 1,000 p.s.i. on each of the locking lugs on the tail gate. This uniform pressure draws up both sides equally tight, prevents loss of loads such as sand, gravel, and stone. It eliminates sprung tail gates and the problem of building up worn locking lugs by welding.

The do-it-yourself kit can be installed by any trucker or dump body manufacturer, and includes a pair of equalizing cylinders, plates, and hoses for pipe connection between cylinders. (375)

● General Tire & Rubber Company has a new tire called the Rock Rib LCM. Constructed of Nygen cord, the tire has an extra-heavy ribbed tread with a variable slope in the groove design which aids in the ejection of stones and rock fragments.

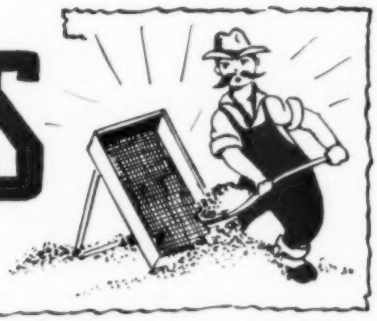
The tread and shoulders consist of a compounded, cut-resistant rubber stock. Four Nygen cord shock plies buttress the 12 to 20 ply tire body. The tire is constructed to resist impact, cutting, and penetration, and has a wide, flat tread.

The Rock Rib LCM comes in sizes 10.00 x 20 through 14.00 x 25. It is available in tubeless construction in sizes 12.00 x 25 and 14.00 x 25. (376)

● This heavy-duty, all-wheel-drive bauxite-hauling truck, with a 28-cu. yd. capacity Alcoa aluminum body, has been manufactured by Oshkosh Motor Truck, Inc., for the Aluminum Company of America.

Use of aluminum in the body reduces the gross vehicle weight, and increases the bauxite payload approximately 5½ tons per trip. The body is exhaust-heated during part of the trip to facilitate clean dumping of the sticky bauxite ore. At other times, the exhaust gases are expelled into the atmosphere by a butterfly valve arrangement which is controlled by the operator from inside the cab. (377)

SCREENINGS



By RAY L. SMITH JR.

WHEN YOU GET this issue of Pit and Quarry, Christmas will be only a day or two around the corner, and soon thereafter Father Time will be speaking his last lines for 1958 and tottering from the stage. Whatever you wished in your letter to Santa Claus, we hope will be yours in great abundance. Personally, we have cut too many notches in the cane to attach much importance to material things, but there is happiness to be had in the love of family, the fellowship of friends, and a oneness with God.

Anyway, old faults are forgiven at Christmas Time, old grudges forgotten. It seems easier then to like everybody—perhaps the influence of the One whose birthday we celebrate, even if His name is too seldom mentioned.

It's a pity that the Chirstmas Sprit doesn't last through the year. We would all get more out of life; there would be no problems of distrust, greed, hatred, and fear. We don't know anybody who stands for a better cause than Santa Claus.

At least, that's our Christmas wish for you—that all the good of it may endure to bring you happiness 365 days, not just the one.

Dynamiters' Tool

NOBODY knows who thought of it, but the idea originated on the Niagara power project. Old bowling pins are being used to plug holes that have been packed with dynamite prior to a blast.

The pins, purchased at 35 cents each, from local alleys, work out well because their contour assures a perfect fit.

The business agents of the pin-sitters unions are going to raise merry hell when this news is brought to their attention. They are certain to claim extra benefits for the boys due to the hazards involved.

If any of our readers happens to have an old bowling ball kicking around, and would care to donate it to the cause, we might go down there and try for a strike or two.

The only thing we're just a bit curious to know is what the lads would do if the contour did *not* assure a perfect fit.

Come to think of it, though, it would be a logical place to play-off one of the "bowl" games. A few well placed, delayed-action shots could arouse in the players the kind of spirit that makes for mayhem on the gridiron.

Potpourri and Succotash

A suburbanite, his wife and four children were about to leave for their usual Sunday afternoon outing.

The woman started for the door. "This time, dear," she said, "you put the children's coats and hats on. I'll sit out in the car and blow the horn."

"There are four requisites to a good short story," explained the English teacher to her class. "Brevity, a reference to religion, some association with royalty, and an illustration of modesty.

"Now with these four things in mind, I'll give you 30 minutes to write a story."

Ten minutes later, Sandy's hand went up.

"That's fine, Sandy," said the teacher. "Now read your story to us."

Sandy read: " 'My God,' said the countess, 'take your hand off my knee.' "

Two men were adrift on an open boat. They'd been lost for five days without food or water and it was beginning to look like the end. Finally, one of them began to pray.

"Oh Lord," he said in a dramatic voice, "I've broken most of your Commandments. I've been a hard drinker. I've run around with a lot of women. But if my life is spared I promise YOU—"

"Wait a minute," his friend interrupted. "Don't go too far. I think I see a ship."

There was a young woman who had so many children that she didn't know what to do, and another coming; so she went to the doctor and said, "Doctor, I keep having children; I don't know what on earth to do." He studied her a moment and then said, "You must take three aspirins." And she said, "When, before or after?" And he said, "Instead."

"Everybody all set back there?" called the bus driver.

"Wait just a minute," a girl's voice said, "until I get my clothes off."

Every head in the bus swung around—to see a girl step off the bus carrying two packages of laundry.

This story, which has been making the rounds for some time, concerns a young lady teacher who took over classes for a friend who was on her honeymoon.

After the honeymoon, the newlyweds and the teacher friend happened to attend the same party. The hostess started to introduce the groom to the wife's friend.

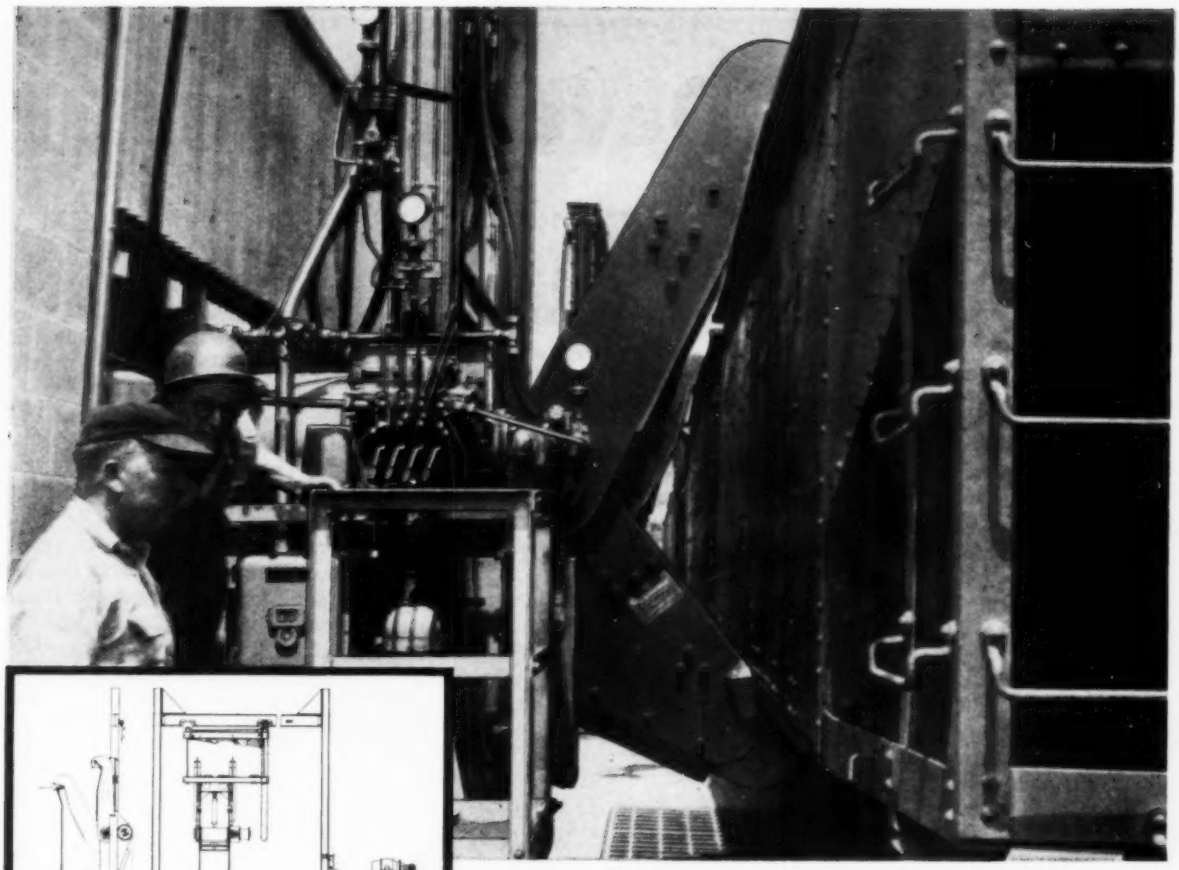
"Oh," he said. "I know Miss Smith very well. In fact, she substituted for my wife on her honeymoon."

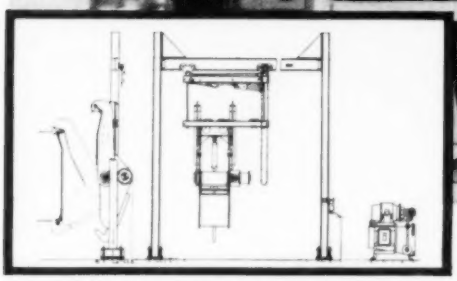
A Texan visiting in Minnesota told his host about a big fish he had caught back home.

"As a matter of fact," said the Texan, "I caught one that was eight inches."

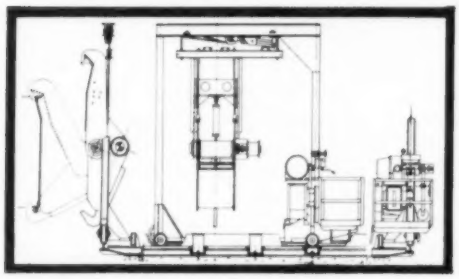
His friend interrupted to say that a fish that size was small in Minnesota.

"Mebbe so," said Tex, "but down home we measure a fish between the eyes."

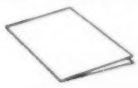




TYPE "B" STATIONARY MOUNTED CARQUAKE
Designed for applications where only slight movement parallel to hopper cars and tracks is required. The unit is mounted to the customer's concrete hopper foundation or steel structure with anchor bolts.



TYPE "C" RAIL MOUNTED CARQUAKE
Mounted on rails permitting travel any desired distance and unloading into any hopper. Concrete piers or steel structure for anchoring rails are all customer need furnish.



WRITE FOR BULLETIN 658

NOW! MINIMUM NOISE WITH MAXIMUM EFFICIENCY IN UNLOADING HOPPER CARS

HYDRAULICALLY POWERED

SA CARQUAKE

- One man unloads hopper-bottom railroad cars quickly, efficiently and with less noise than overhead car shakeouts.
- Hydraulically powered vibration with speed controlled to match required capacity.
- No expensive overhead structures needed — a completely self-contained unit—unlimited movement parallel to track.
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Labor Developments

THE MOST important labor development of the last month was the surprising strength shown by organized labor in the elections. As has been pointed out repeatedly since then, more than half of the members of the United States Senate and of the United States House carry the AFL-CIO endorsement. Of equal importance is the fact that the trend toward enactment of so-called "right-to-work" laws was reversed. In six states where such legislation was submitted to the voters for referendum, it was turned down in five and passed in only one —Kansas—by an unexpectedly narrow margin.

This change was not nearly so surprising to those who had the good fortune to hear or to read an address by one of the most astute observers of the American scene, Professor Edwin E. Witte, retired chairman of the Department of Economics at the University of Wisconsin. In this address on *The Crisis in American Unionism,* delivered before the National Academy of Arbitrators, Professor Witte made the following prediction:

"What I shall say from this point on is a conditional forecast, which I believe to be warranted on the basis of experience in this and other countries. It is my expectation that the major repercussions of the labor scandals may well be in the political field. Even more do I expect such a result if Congress should enact legislation which labor interprets as an attack upon its existence or effectiveness. This may also be the result of a stinging defeat, should it occur, to labor in the contract negotiations and ensuing strikes in the spring and summer. Holding the line against wage increases, particularly if unemployment continues to mount and

By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D. C.-Philadelphia, Pa.

farm prices do not improve, may well give us the most radical Congress we have had in two decades."

The above observations were made on February 1, 1958. Professor Witte's conditional forecast has now become an actuality. Nor can the accuracy of that forecast be attributed entirely to luck, for as Professor Witte went on to say:

"Interviewed, along with other public members of the former National War Labor Board after the passage of the Taft-Hartley Act, I ventured the prediction that the principal effect of the legislation crammed down labor's throat by the Eightieth Congress was likely to be increased political activity on the part of organized labor, rather than any pronounced change in the economic strength of the parties.

"As I look back upon that forecast, it seems to me that I was a very lucky prophet. The Taft-Hartley Act hurt labor less than it had feared and also benefited anti-union employers less than they had hoped. But the passage of the Taft-Hartley Act put labor into politics to an extent not known for many years preceding. The surprising re-election of President Truman in 1948 was ascribed by political commentators principally to a sizable switch in the farm vote, but the defeat of nearly one-third of the members of the 80th Congress who had voted for the Taft-Hartley Act occurred almost entirely in industrial districts.

"Organized labor has always been interested in what government is doing and to some extent has engaged in political activities. But it is most active politically when it believes that its operations in the economic sphere are being hampered or likely to be hampered. Dyed-in-the-wool unionists follow the advice of their leaders in politics when they believe their unions to be in danger. Working men generally react most violently politically when they have sustained personal loss or fear such a loss. Among situations producing such a result are unemployment, wage cuts, and defeats in strikes. It seems to me to be probable that the more the factors enumerated above coincide, the more certain and the greater will be the political reaction.

"There is considerable likelihood that quite a number of these factors will coincide by the election of 1958 . . . It is my expectation, also, that the political reaction will not stop with party labels. It may well come to pass that the long conservative swing in American politics manifested now for 20 years, may be reversed."

Professor Witte was not very happy about the consequences which he predicted. He completed his statement with the following:

"It is futile to talk about keeping government out of labor-management relations so long as the parties are forever turning to the government for help. When they do this, they should not only expect retaliation when the almost inevitable pendular swing occurs, but they should realize that they thereby tend to make the union more political in their objectives. Being old-fashioned, I prefer our traditional American type of unionism, but I can see politically-oriented unionism as a consequence of the increasing role we assign to government in labor-management relations."

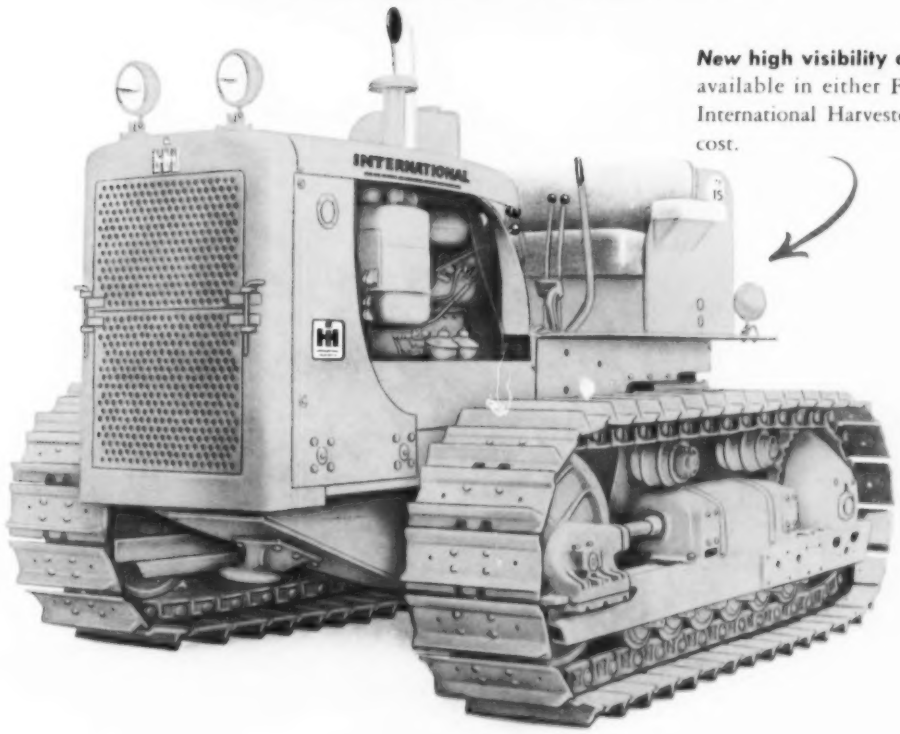
These are words to be pondered. It is no longer possible to ascribe the accuracy of the prediction to luck. Certain very strong forces are at work, which must be reckoned with.

It is entirely obvious that organized labor has suffered some sting-

(*Continued on page 77*)

NEW International® TD-15 tops 100-hp field...

with exclusive power and control features!



***New* high visibility color.** Optionally available in either Federal yellow or International Harvester red at no extra cost.

NEW

6-cylinder diesel power . . . 105-hp fully-proven D-554 engine—full 20,500 lbs drawbar pull.

NEW

6-speed full-reverse transmission . . . 20% higher reverse speeds. A speed for every work or travel need plus fast "Shuttle-Bar" direction changing!

NEW

Precision control
Foot Decelerator for instant speed changes—fast "Shuttle-Bar" forward-reverse travel.

NEW

1,000-hour lube interval, heavy-duty track rollers
. . . heavy-duty, long-life bushing type, with extra capacity lube reservoir.

...and here's the pay-off for you...

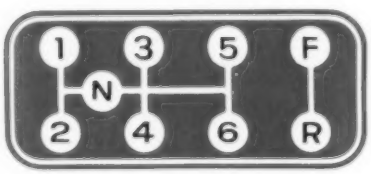
You move in on...and speed up

....with NEW TD-15

For "easing up" on power and speed without letting go of steering levers or other controls, simply use the optional "no hands" Foot Decelerator!

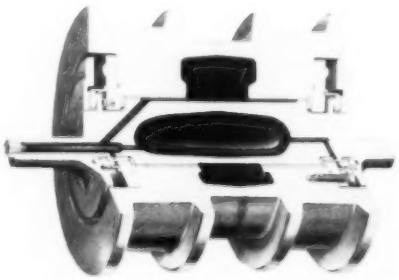
Exclusive six-speed "single stick" shift . . . forward and reverse "Shuttle-Bar"

You shift through all six speed ranges of the new TD-15—forward or reverse—with a single lever. Shift pattern is planned for gear-changing ease and speed with a fast sweep of the hand—to give you instant use of the speed you need. To speed the work-cycle and take full advantage of fast shifting, you simply push or pull the "Shuttle-Bar"—to change TD-15 forward or reverse instantly.



1,000-hour lube interval, heavy-duty, track rollers

Not just another "claim" . . . International now combines heavy-duty *bushing design*, exclusive cartridge-type *metal-to-metal seals*, and king-size lube reservoirs, to offer the industry the first heavy-duty type roller as standard equipment on the TD-15. Thick shells for safe build-up and exclusive pressure relief passages for flush-out and prevention of seal damage from power lubricators are part of this new design.



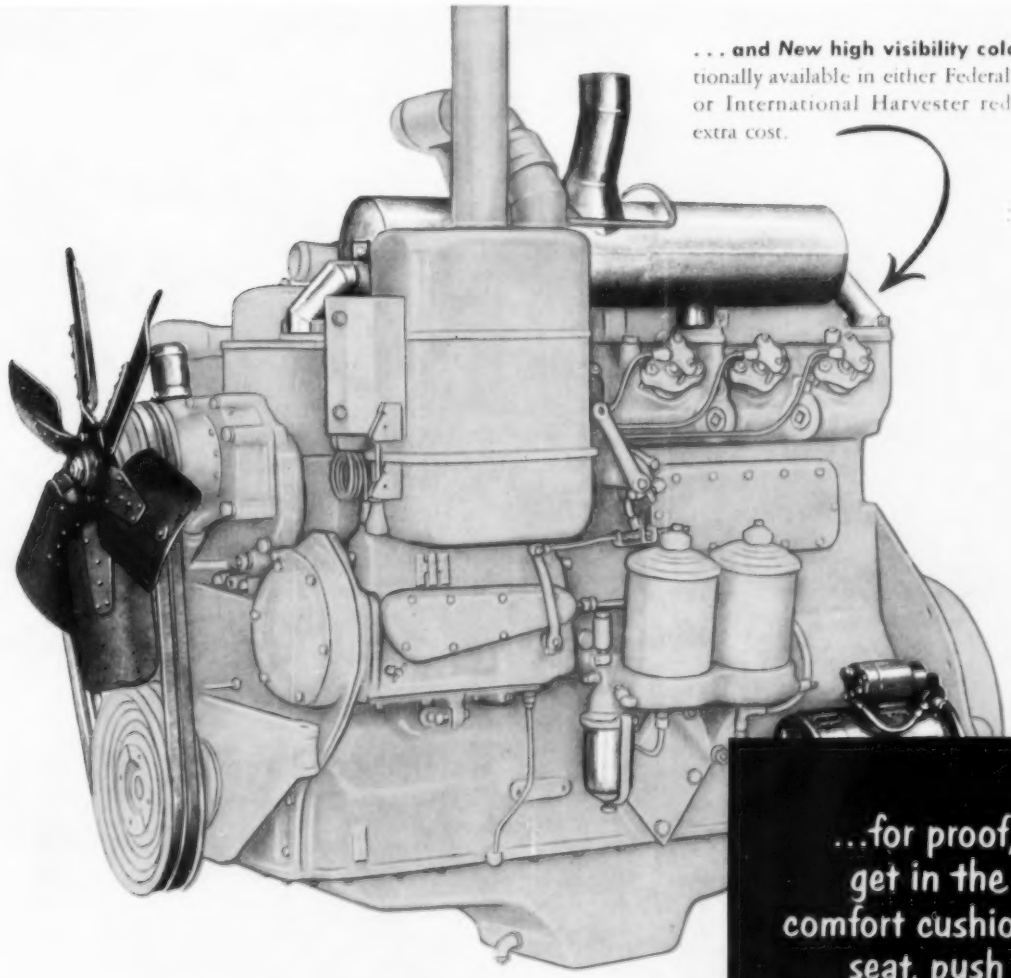
...a whole new range of jobs...

capacity and control

Smooth 6-cylinder... BIG 105 IH diesel horsepower

You get 6-cylinder smoothness from this new International D-554 diesel engine that powers the new TD-15. This fully-proven power plant produces its 105 net hp at 1,650 rpm . . . features famous International 45-degree angle operation full-flow lubrication, closed pressurized cooling, exclusive twin plunger pump fuel injection system, fully counter-balanced crankshaft, positive valve rotators, and all-weather gasoline conversion starting. Here's an engine built for long life, big-capacity output!

New power, strength, control, and reliability features like these show you how and why the 105-hp TD-15 tops its field. You move in on a new range of heavy jobs—material-moving, land-clearing, hauling, loading, excavating, logging, mining—that no longer belongs to next-size-bigger crawlers!



. . . and *New* high visibility color. Optionally available in either Federal yellow or International Harvester red at no extra cost.

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Gravel Treatment, Lightweight Aggregates Featured at A.C.I. Convention— Headquarters Building Dedicated

THE tenth regional convention of the American Concrete Institute, held at the Statler-Hilton Hotel at Detroit, Mich., on October 27, 28 and 29, was given an unusual international atmosphere by the presence of several European representatives, all eminent in the concrete world, three of whom presented papers at the technical sessions. The climax of the meeting was the formal dedication of the Institute's new headquarters building in Detroit. The registration, over 550, was the largest of the series of annual gatherings of concrete men which have been arranged by local A.C.I. committees. The general chairman of the Detroit committee was J. Gardner Martin, district engineer, Portland Cement Association.

The dedicatory ceremony for the new building was conducted at a formal luncheon held in the hotel ballroom on the third day of the convention. The presiding officer was A. Allan Bates, vice-president, P.C.A., Chicago, Ill. He was flanked at the head table by former presidents and current officers of the Institute, each of whom has become prominent in the concrete field. Dr. Bates pointed out that this was a "day of historic reality" as it represented the fruition of dreams and efforts of many men and institutions interested in expanding and improving concrete construction.

In outlining a look into the future, Douglas McHenry, present president of A.C.I. and head of research and development for P.C.A., predicted that the new building facilities would permit even greater service than heretofore. He pointed out that 50 years of development was represented in the present A.C.I. Building Code, which has been adopted widely by communities throughout this country.

The guest speaker was Robert F. Legget, director of building research, National Research Council of Canada, who referred to the headquarters building as representing a milestone in the history of concrete. He reminded the audience that the versatility of concrete offers new horizons for structural and architectural effects. In reviewing important buildings throughout the world, he pointed out the growing use of color and unusual shapes.

Design Session At the opening session of the convention, James D. Piper, P.C.A., Chicago, reported on Russian progress in concrete technology. Mr. Piper and Walter H. Price, past president of A.C.I., were members of a six-man delegation who were invited to inspect concrete construction in Moscow and Leningrad. The party was in Russia from May 11 to 21 and visited laboratories, design offices, precasting plants, housing developments, and bridge and industrial construction. Conferences with the top men at each location were held before and after the visits. Members of the party were impressed with the wide use of precast and pretensioned members, and the very evident efforts to conserve structural steel. Apartment houses up to eight stories high have been built with precast structural units and wall panels.

The relation between form and structural design was discussed by Professor A. M. Haas, Institute of Technology, Delft, Netherlands, and president of the Netherlands Concrete Association. A new concept of "mean" stresses as a tool for determining failure criteria in a reinforced concrete element was outlined by Professor Boris Bresler, University of California, Berkeley. Dr. I. M. Viest, formerly with the University of Illinois and currently with the A.A.S.H.O. road test project at Ottawa, Ill., discussed the analysis of shear test data. In discussing this paper, J. A. Hanson, P.C.A., Chicago, reported the results of recent tests upon beams made with seven types of lightweight aggregates and with gravel. The tests showed that beams, without web reinforcement, made with lightweight aggregates could be designed with strength comparable to a normal weight gravel beam, but that the deflections of the lightweight beams were 15 to 35 percent greater than for the gravel beam. Factors which contribute to the additional cost of a building designed to resist bomb blast, as compared to conventional design, were discussed by W. W. Yee, director of engineering with Smith, Hinchman and Grylls, Associates, Inc., Detroit.

Construction Session A recently developed type of precast, insulated wall panel was described by R. C. Adams, Marietta Concrete Corp., Marietta, Ohio. A companion paper on the service performance of precast wall panels was presented by Victor Leabu of Giffels and Rossetti, Inc. (formerly Giffels and Vallet, Inc.) Detroit. The assignment to A.C.I. Committee 622, Formwork for Concrete, was discussed by Harry Ellsberg, chief structural engineer, Giffels and Rossetti, Detroit.

Building Code Session Raymond C. Reese, consulting engineer, Toledo, Ohio, chairman of Committee 318, Standard Building Code, presided at the session devoted to the work of this important committee. He pointed out that revision of the code will be necessary from time to time as new and better techniques

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"Its Ease of Operation means maximum operator efficiency"

Thomas Venezia, Supt. of Massaro Company, Inc., Fulton, N. Y. says, "We've been using Hough 4-wheel-drive 'PAYLOADER' units since 1951 and have three now." Referring to the newest, a 9,000 lb.-carry-capacity "PAYLOADER" he says, "It has worked out very satisfactorily. We particularly like the ease of operation which means maximum operator efficiency and the roll-back bucket action that insures cleaner, faster operations."

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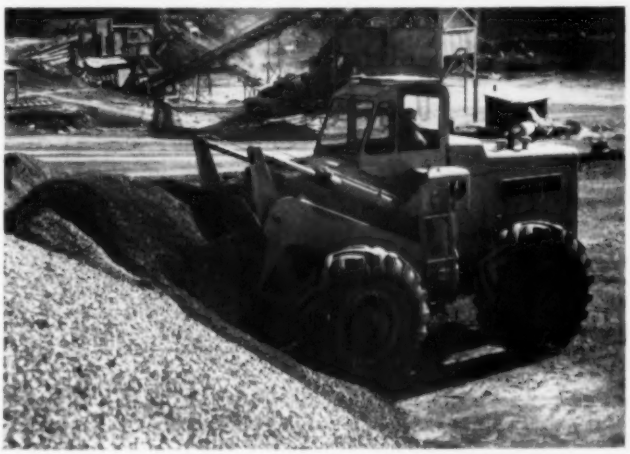

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W. M. Gatewood, Asst. Plant Supt. of West Sand and Gravel, Inc., Richmond, Va. also says their 9000 lb.-carry-capacity "PAYLOADER", "Keeps the yard stockpile moving out, averaging 2,500 tons per ten hours without pushing. We have found it versatile, fast and dependable . . . digs packed materials faster than other large loader on same job . . . good balance and traction."

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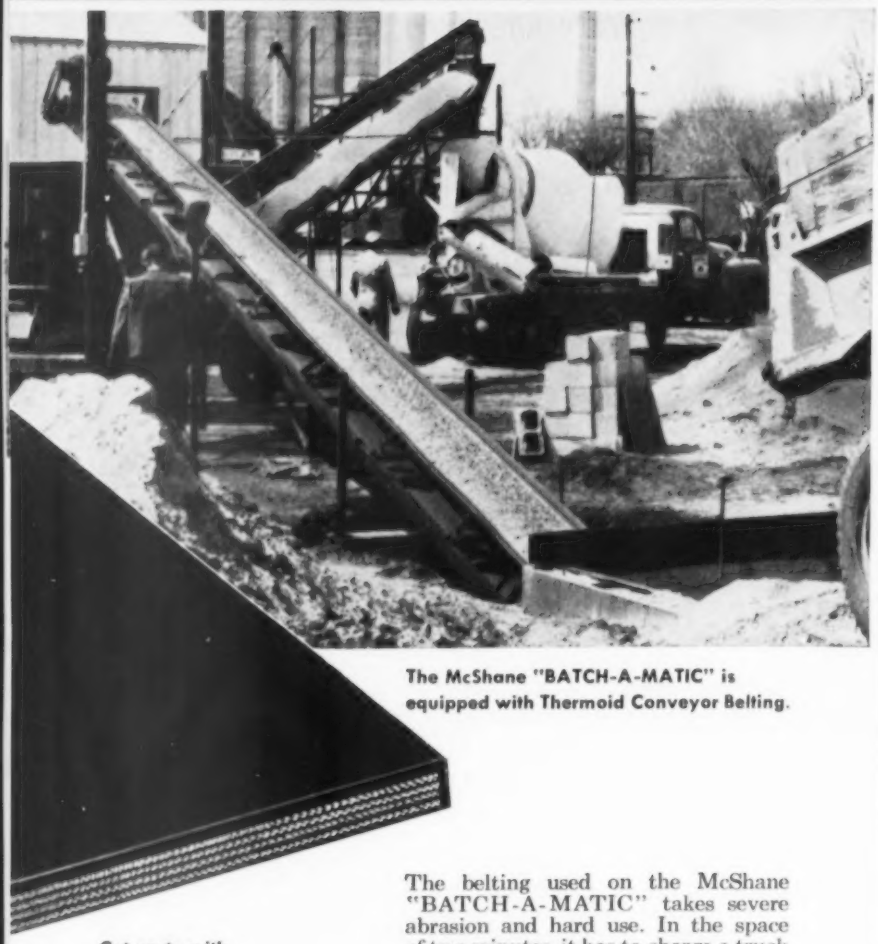

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are developed as the result of research and experience. He mentioned several fields in which progress can be expected. The growing use of lightweight concrete must be considered. Higher strength concrete such as 6,000 p.s.i. is being used in structures. High-grade steel with yield point of 60,000 to 75,000 p.s.i. is now available, with the possibility of 100,000 lb. in the near future. The use of pre-stressed members in special structures such as domes, arches, and wide plates is a new development. Mr. Reese concluded that these and other advances will justify periodic code revisions.

The use of high-strength steel in reinforced concrete was discussed by Professor Georg Wastlund, director of the Swedish Cement and Concrete Institute, Stockholm, Sweden.

Professor George Winter, Cornell University, stated that the "ultimate strength" method of design is being used by a substantial portion of engineers in this country. Current codes have set arbitrary limits on allowable stresses, which have discouraged the development of high-strength steels. He suggested that the use of higher-strength steel with corresponding increase in allowable stresses may reduce the cost of steel in a structure by as much as 30 percent, and also facilitate placing.

In discussing footings, Paul Rogers, consulting engineer, Chicago stated that the use of ultimate strength design has tended to adjust practices to eliminate unneeded quantities of materials. He considered that the few failures experienced with footings may safely permit increasing presently allowed loads. A new committee on design of footings will include consideration of soil conditions, and also the treatment of unusual structures like caissons and grain elevators.

Several speakers expressed criticism of the present code provisions for the design of flat slabs.

Materials Session The satisfactory experience with heavy-media separation of aggregate by the Killins Gravel Company, Ann Arbor, Mich., was reported by David A. Killins, president. This company's gravel deposit contains

a substantial proportion of chert, shale, lignite, and clay balls, which make it unacceptable for Michigan highway construction. Equipment was installed to add to the raw feed a heavy media comprised of ferro silicate and magnetite. In the subsequent washing most of the objectionable matter is floated off with the media, thereby producing a superior quality of gravel. The deleterious material is reduced from about 10 percent to below 3 percent. Speaking in general terms, Mr. Killins estimated the increased cost of production at about 20 cents per ton, as compared to an increased selling price of about 50 cents a ton.

The results of the new series of tests on lightweight concrete made with expanded blast-furnace slag aggregate were reported by D. W. Lewis, National Slag Association, Washington, D. C. The tests were made with typical expanded-slag aggregates having dry weights of 60 lb. and 45 lb. per cu. ft. with various sands, and with cement contents from 4 to 9 sacks per cu. yd. Coefficients of expansion, thermal conductivity, and freezing and thawing tests were all run. Twenty-eight day strengths over 2,000 p.s.i. were considered as structural concrete and below 200 p.s.i. as insulating concrete. The detailed data developed during the projects were given in detail in a recent issue of the A.C.I. *Journal*.

Washington News Letter

(*From page* 12)

he should veto them, a liberal Democratic-Republican coalition may very well be able to override that veto.

Finally, a measure which has been discussed during several congressional sessions, but never voted upon —the program to help economically depressed areas—will get a far more sympathetic response, and is very likely to pass within the next year.

It is obvious that the voters apparently want government spending — not only federal spending, but also state and local spending—since in this recent election more than 78 per cent of the proposed borrowing was approved by the voters. This amounts to approximately two billion dollars more for local spending. Most of these funds will be used for construction purposes of one kind or another. Not only were such bond issues voted directly, but in many states the way was also cleared for future bond issues through votes which permitted the raising of debt limits.

It is clear that the voters are not disturbed by the prospect of higher governmental spending, higher governmental debt, or even somewhat higher price levels. The last election appears to have demonstrated beyond doubt, if any further demonstration were needed, that the voters are disturbed about unemployment, even to a moderate degree, and about a possible decline in their standard of living. It seems that they are now and will continue to be in favor of inflation until it runs away and creates unemployment and a decline in their standard of living. Woe to any Congress or Administration which is in power when that happens! This is the tightrope which the Democrats now have to walk.

Labor Developments

(*From page* 68)

ing defeats during the last year. The most serious of these were not the ones administered by the McClellan Committee and its revelations of wrong-doing in certain powerful segments of the labor movement. These were not condoned by the labor movement generally, and, in fact, the more responsible parts of the A.F.L.-C.I.O. co-operated with the committee originally because they were at least as concerned about the problem as were the public officials.

The reaction did not set in until it appeared to them that the objective was more than just to help them clean house. To them, the final evidence that the real objective was to weaken the labor movement was the attempt to sweep Walter Reuther and his auto workers' union into the same corner with Jimmy Hoffa and his Teamsters.

The real fighting back started when the United Auto Workers suffered a serious defeat at the bargaining table. After an extended period without a contract, they settled for little (if anything) more than the companies had offered some months earlier. According to Professor Witte's analysis, the political consequences were virtually certain.

On the basis of what has happened, businessmen are begining to ask themselves the question as to whether it will be necessary for them to develop counter-political organizations. The General Electric Company came to the conclusion some time ago that this was absolutely essential. In the current election, they took a positive position and they were directly active. They encouraged other companies, large and small, to join them in their political activity. In this they were partially successful. In assessing the wisdom of this activity, Professor Witte's analysis may prove very significant. Although he did not directly touch on this point. However, it may be assumed from his discussion that this movement on the part of large business will make labor-management relations almost an entirely political matter. There is little doubt that he would deplore such a development.

Nevertheless, a realistic appraisal of the recent development indicates that in the next couple of years organized labor will concentrate on getting its friends in Congress to pass legislation which will no longer make it necessary for them to handle the right-to-work issue on a state-by-state basis. This can be done by the simple strategem of eliminating Section 14 (b) from the Taft-Hartley Act. This is a limited objective, and if organized labor were to direct itself to this objective alone, it could probably accomplish this aim.

However, organized labor has several other objectives in view, among them an increase in the Federal Minimum Wage to approximately $1.25 and the extension of the minimum wage law coverage to areas not now covered. If the efforts of labor proponents are diffused, however, they may find that, despite their presumed victory, it is easier to get their friends elected than to get those elected to carry out their wishes.

Finally, the ultimate switch in tactics may develop. Organized labor may insist that this Congress enact legislation which formerly would have been regarded as restrictive—that is, legislation to limit at least the dictatorial powers of unsavory union leadership.

← Enter 76 on card, page 105

unique mine development, impressive mill form backdrop for new

Lake Asbestos of Quebec

REPRESENTING an investment of about $36,000,000, the new modern mine and mill of Lake Asbestos of Quebec, Ltd., at Black Lake, Quebec, also symbolizes a 10 percent gain in Canadian asbestos productive capacity, as well as a 7 percent increase in the supply of this vital raw material to the free world's markets.

At recent dedication ceremonies top Canadian government officials and company officers personified the international background of co-operation between Canadian and U. S. interests in bringing this 100,000-ton-per-year facility into existence. Under an agreement between United Asbestos Corporation, Ltd., holders of mining rights, and the American Smelting and Refining Company, the impressive installation is owned and operated by Lake Asbestos of Quebec, a wholly-owned subsidiary of Asarco.

Indicative of the long preparation and planning that culminated in this important new unit in the asbestos industry, is the fact that "shake-down" runs were started just one month short of 10 years from the time that the first test hole was drilled at Black Lake. After two ore bodies were proven out (a third is indicated but needs further development), the Canadian interests brought the development to the attention of Asarco. In May, 1954, the latter exercised an option under the agreement to complete development and carry out operations on a profit-sharing basis.

500-acre Canadian lake disappears as draining and dredging work frees underwater orebody

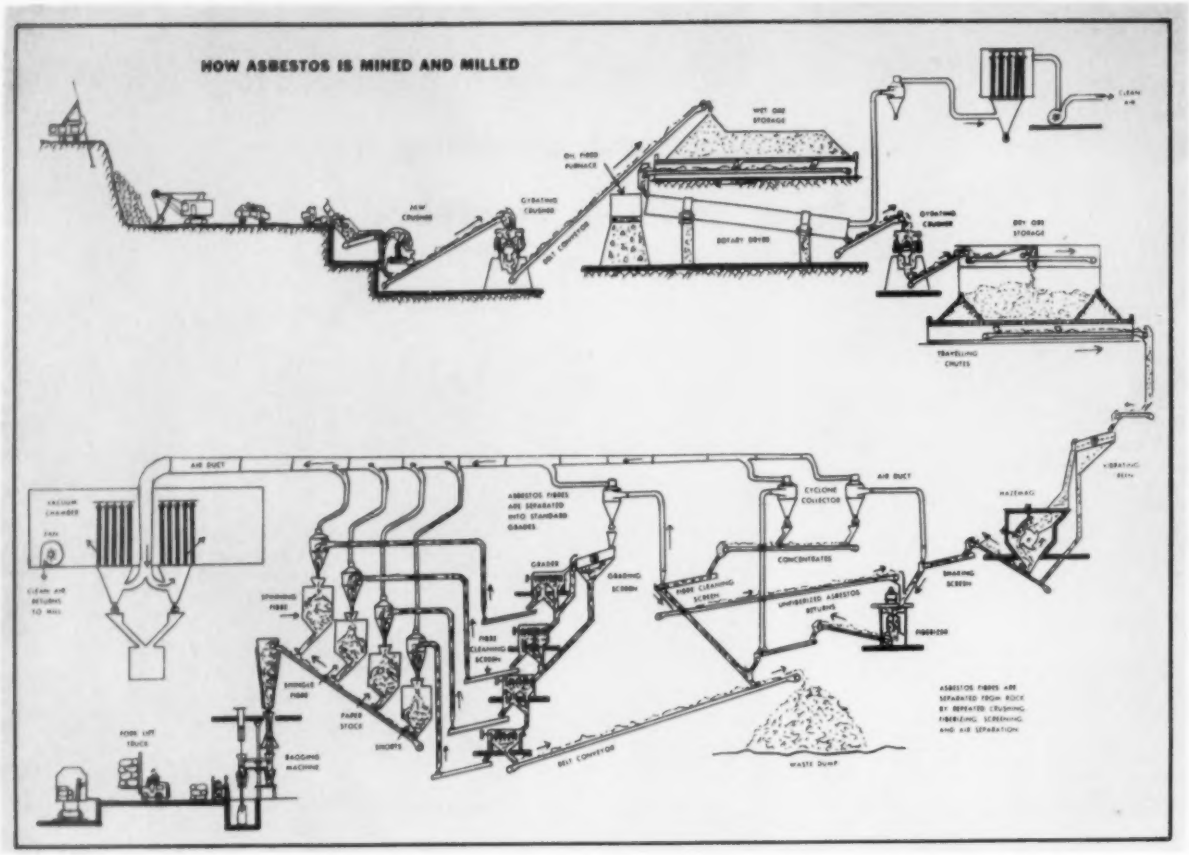
In the center of this aerial view of the new Lake Asbestos of Quebec installation is the main mill building; to its right is the covered dry-ore storage; in the center foreground, the outside wet-ore storage pile, and at the lower left, the screen house.

Dredging operations are scheduled for completion early next year. This is all that remains of what had been a 500-acre lake covering the ore bodies.

Operations

The next step was that of initiating the highly complicated project involving draining of the lake and simultaneous dredging of about 30,000,000 cu. yd. of overburden on the deposit (another 7,000,000 cu. yd. requires stripping by shovel), and relocation of the area drainage pattern to ready the property for open-pit mining. On July 1, 1956, ground was broken for the mill building; and last July, exactly two years later, initial operations were started.

One of the loading areas where 4-cu. yd. electric shovels load 25-ton capacity trucks for haul to the primary crusher hopper.



A schematic diagram of the material flow through the entire operation, from quarry to packing of finished asbestos fibers.

In contrast to the captive self-consumed production of most other asbestos producers, the entire output of the Lake Asbestos mill will be placed on the open market. This is consistent with other Asarco activities that include mines, smelters, and refineries throughout the world, in which the firm operates solely as a producer and supplier of raw materials to industrial consumers.

The developments at Black Lake have been of considerable interest since they were initiated, and available data has been previously presented in these pages*. In those earlier reports, the historic background, hydraulics problems, highway relocation, and dredging operations preceding the pit opening were described in detail. Therefore, the following report is concerned primarily with mining and milling operations.

*See PIT AND QUARRY, August, 1957, pp. 68-75. Also December, 1954, p. 22; January, 1957, p. 27; August, 1958, p. 23.

Mining By summer of this year the 500-acre lake had been drained low enough to allow the start of mining and of break-in operations in the mill. The original lake level was at 750 ft.; and early next year it will be completely drained, when the 530-ft. level is reached. Thus exposed is an area that will permit open-pit mining for an estimated 20 years down to a depth of 500 ft. Subsequently, underground operations will be required, according to long-range plans.

Ore reserves are currently estimated at 42,000,000 tons, and mining is presently carried out in "A" and "C" ore bodies. One of the latter has a surface elevation of 630 ft., and the other of 670 ft.—or 120 and 80 ft., respectively, below the original lake level. Quarrying is done on 40-ft. benches established by 6⅝-in. primary blast holes on a 10- to 15-ft. spacing with 20- to 30-ft. burden. A Canadian Ingersoll-Rand down-the-hole drill is used.

Drilling for secondary blasting is done with crawler-mounted wagon drills and boom-supported Travel drills. Broken ore is loaded out by P&H and Marion (4- and 4½-cu. yd.) electric shovels, and hauled to the primary crusher hopper in the pit by 25-ton capacity Euclid and Mack end-dump trucks.

As dumped at the primary crusher building, the ore is received in a 100-ton capacity hopper, from which it is transferred on a 60-in. by 18-ft. Stephens-Adamson heavy-duty pan feeder to the primary crusher. The latter, a 48- by 60-in. Traylor jaw unit, is set at a 6½-in. opening.

The primary crusher product is conveyed to a screen house, where the feed is split to a pair of 5- by 12-ft. Tyler screens. These are equipped with 4-in. square opening screencloth on which separation is made of mill feed ore. The retained fraction is returned to the primary crusher house, where it is put through secondary reduction in a 7-

ft. Symons cone crusher. Discharge from the latter joins that of the primary jaw and is returned to the screenhouse.

Throughs from the two screens are transported to a tripper conveyor above an outside wet-rock storage pile. Approximately one month's mill run, or 120,000 tons of ore, is maintained in this storage, which provides these advantages: blending of ore from the two ore bodies, a 24-hr.-per-day regulated feed to the mill driers, plus elimination of any delay in mill feed due to breakdown in any preceding operation phases.

Milling Efficient asbestos milling requires a minimum moisture content in the ore being processed. A battery of vibrating feeders in a reclaiming tunnel below the wet-rock storage delivers the ore at a controlled rate to a conveyor on which the material is conveyed to the drying department. Here the feed is screened to plus and minus 2-in. fractions, with the larger normally bypassing the driers except when it is abnormally wet or carrying snow and ice. Drying temperatures in the Hardinge rotary, oil-fired driers is varied in accordance with the moisture content of the feed.

Dried ore is next screened on a pair of 5- by 12-ft. Tyler screens before it is delivered to a 20-000-ton capacity covered storage bin. Separation is made on ¾-in. screencloth, the oversize passing to a 5½-ft. cone crusher. Discharge from the latter joins screen throughs in transport to storage.

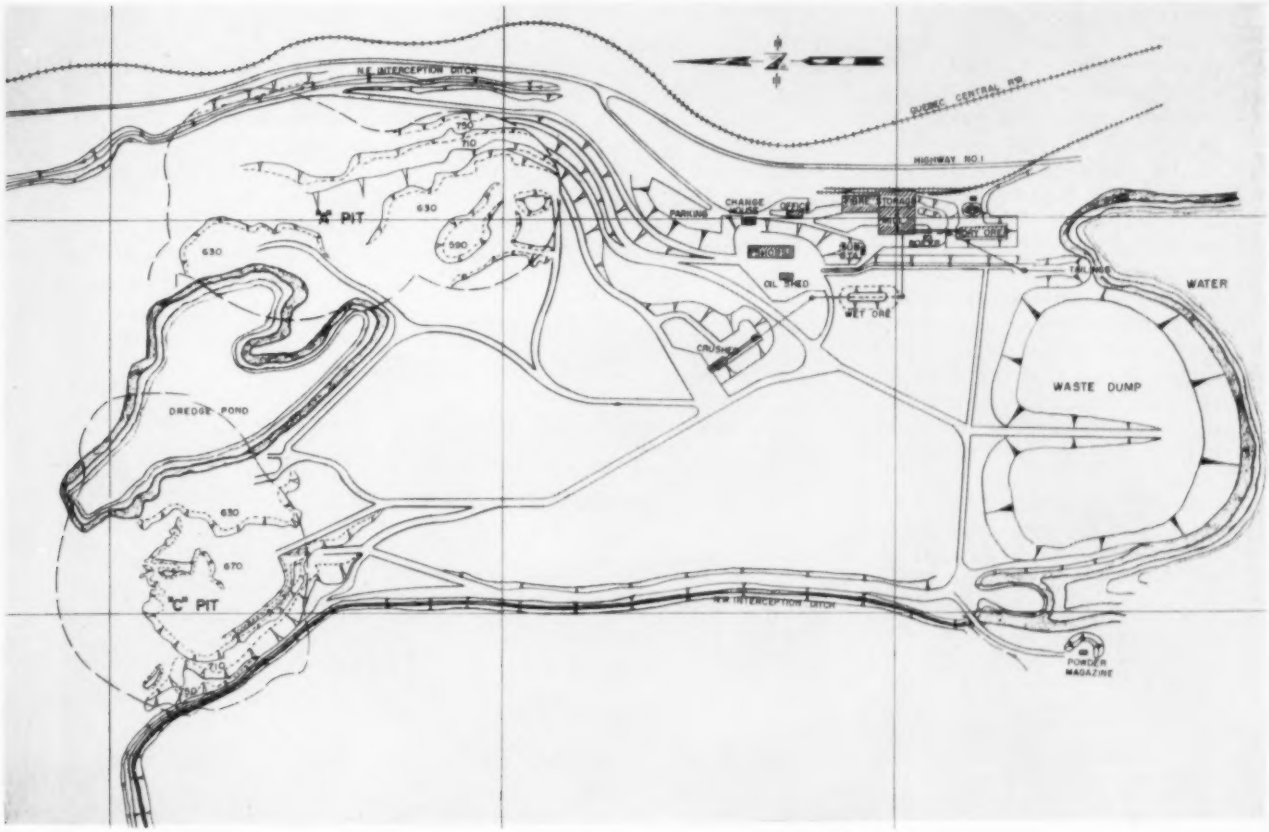
The dry-ore storage bin is separate from the main mill building, as is the outside wet-rock storage, and recovery of dry ore for mill feed is accomplished with vibrating feeders in an underlying reclaiming tunnel. Dried ore brought into the mill is discharged into a blending surge bin.

The main mill building is an impressive structure 150 ft. wide, 260 ft. long, and 130 ft. high, or equivalent to 14 stories. It is totally enclosed by asbestos cement and corrugated metal siding, and it houses all milling phases and equipment, plus the driers.

Basically, the flow through the process involves a series of reduction, fiberizing, and screening stages from which fibers are aspirated to cyclone collectors, followed by a grading sequence—also involving cyclonic collection—in which the finished material is separated according to the different standard grades. The ore at Black Lake is described as being of exceptionally high quality, *i.e.*, the product has a high proportion of the more valuable, longer (spinning grade) fibers.

From the blending surge bin at the head of the mill flow lines, the feed is delivered to three identical "rock" lines by a set of Hardinge constant-weight feeders. In the first stage of each line, the material passes over a vibrating screen from which the oversize is fed to a Hazemag crusher for reduction to a top size of ½-in. Throughs from the above screen and the crusher prod-

The general layout of the Lake Asbestos mine and plant.



A view in the crusher building. Primary reduction is accomplished with a jaw crusher set to a 6½-in. opening.

uct then pass over a heavy shaking screen equipped with an underlying ball deck and an aspiration hood. The balls serve to keep the screen openings from becoming blinded.

At this point, any sand present is screened out, the first loose fibers are drawn off, and the ore retained is fed to a fiberizer. Discharge from this unit is again passed over a shaking screen, where the process described above is repeated.

Asbestos fiber aspirated from the various screens is collected in a battery of cyclones from which it flows to the grading phase. The waste from all preceding screening phases (about 90 percent of the ore entering the mill) is transported to a tailings dump and removed from the mill site on a belt conveying system. The design of the mill provides for the removal of approximately 35 percent of the original feed as tailings after the third screening operation. As a result, the third and fourth milling stages are relieved of a substantial load.

In the three-section horizontal rotary grading screens the fibers are separated, in effect classified, by lengths. These then flow to following cleaning screens from which they are aspirated to another battery of cyclones. The latter, in turn, discharge into the 14 finished fiber storage bins.

Approximately 800,000 cu. ft. of air per minute is required to provide necessary aspiration of all screens in the mill, based on processing 5,000 to 6,000 tons of ore in 24 hours. This air flow is provided by a group of six 350-hp. fans in a filter chamber at the top of the mill. As the air drops its fiber load in the cyclones after being drawn through the aspirating hoods, it enters a duct leading to a plenum below a battery of bag filters housed in the filter chamber. There are 3,400 sq. ft. of filter cloth in the bag collectors. The clean air drawn from these units by the fans in the filter chamber may be returned to the mill or be vented to the outside through adjustable louvres.

From the storage bins noted above, the finnished fibers are fed *via* screw conveyors to four St. Regis and four vertical screw bagging machines with which paper and jute bags are packed for shipment. Both rail and truck carriers are loaded from docks in the mill warehouse.

The many products in which asbestos fibers are utilized are well known and run the gamut from cloth, brake linings, insulations, and gaskets, to many building items including shingles, sidings, tiles, etc. It is expected that the output of the Lake Asbestos mill will be marketed similarly to that of other Canadian producers, who sell about 50 percent of their production to U. S. customers, and export the rest primarily to Europe, Latin America, Japan, and Australia.

In a modern mill of this size and complexity of flow there are naturally many interesting physical details. Among these are the fact that the various phases represent a total connected load of 7,000 hp., and involve 630 electric motors. There is the equivalent of 5 miles of aspiration lines and chutes in the mill, and the overall operation contains 3 miles of conveyor belting. Construction required 4,500 tons of structural steel, and 15,000 cu. yd. of reinforced concrete.

Approximately 425 men are employed in the mining and milling

From the crusher building, left, the ore is transported to the screen house, center, from which oversize is returned to the crusher building and fed to a secondary cone crusher. Screen throughs continue to the wet rock storage, far right.

operations of the Lake Asbestos of Quebec organization, which is headed by Robert D. Bradford, president (also a vice-president and director of Asarco), and Michael J. Messel, general manager.

Background The mining project at Black Lake is unique due to the development of an ore body that existed under a lake—the latter a key segment of the drainage pattern in a relatively populous area. It posed difficult engineering problems, required a great capital investment, and pioneered in establishing techniques for exploiting mineral areas affected by comparable difficulties.

Although a larger similar venture was undertaken earlier at Steep Rock, Ontario, where a subaqueous iron ore deposit was exposed by draining and dredging, the complexity of hydraulics problems at Black Lake were greater in many respects. The annual rainfall at Black Lake (44 in.) is about twice that at Steep Rock, and the natural drainage system at the latter was in a wilderness area, as compared to the settled region of Black Lake and Thetford Mines. The soft material covering the lake shores at Black Lake had to be terraced to prevent slides into the pit. At Steep Rock, as the name implies, the adjoining areas had exposed, solid rock.

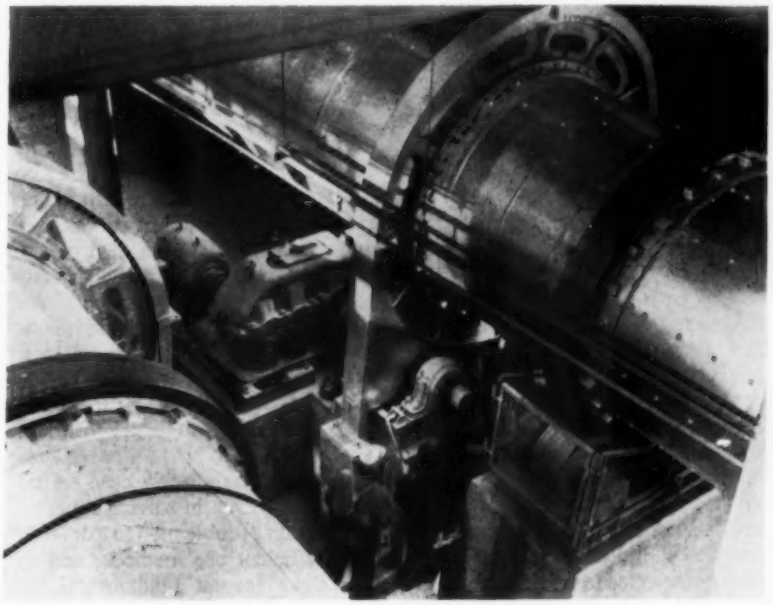
A new river channel had to be made, and flood control dams had to be built at Black Lake, as well as interceptor ditches around the former lake area. This man-made drainage pattern had to be equal to the former natural system in its ability to handle maximum runoff. Significantly, this can amount to 7 in. of rain in a 24-hour period. Concurrently with re-establishing a drainage system, the development required relocation of an arterial highway—actually construction of nearly two miles of 22-ft. wide pavement on a 46-in. subgrade.

The dredging operation (as detailed in the August, 1957, issue of PIT AND QUARRY) is an impressive venture in its own right. Assembled on the site at Black Lake, the 200-ton dredge was shipped in 11 sections. An 8-ft. long spiral cutter head, 7 ft. in diameter, is mounted on a 75-ft. ladder.

Three large pumps are incorporated in the dredging and bank monitoring system. One 30-in. 50,000-g.p.m. unit driven by a 6,000-hp. electric motor is mounted on the dredge; a similar (booster) pump is located on shore, and a third unit, driven by a 2,500-hp. motor completes the pumping system with which the overburden is transferred to the disposal area.

An unusual feature of the dredge is the installation of a 20- by 36-in. jaw crusher in the suction line. With this completely submerged crusher the large boulders picked up in dredging are reduced to a top size (18-in. or less) that allows the material to pass through the pump without jamming.

Considerable auxiliary marine equipment is required in the overall dredging program. A cable reel barge is employed in handling the 5-in. submarine power cable; a pair of 275-hp. tugs are equipped as ice-breakers to aid the dredge in oper-



Drying temperature in these oil-fired dryers is varied in accordance with feed moisture content.

In one of the first stages of flow through the mill, the ore is fed to crushers of this type for reduction to a top size of ½ in.

Two of the battery of fiberizers in which the last of the fibers are liberated from the ore.

One of the eight packing machines. Loose-filled or pressure packed fibers are shipped in both paper and jute bags.

ating through ice that reaches a thickness of 3½ ft.; two more barges are fitted out for drilling hard overburden ahead of the dredge, in one case, and for monitoring shoreline slopes in the other. Pontoon lines, heavy equipment, etc., are handled by a derrick barge.

As noted earlier, dredging operations are scheduled for completion early in 1959. Although the cost of this tremendous project is approximately $3,000,000 (including dredge, pipelines, booster stations, and power auxiliaries), it is believed that the undertaking has paid for itself, since the estimated expense of removing the vast amount of material by other means would have been nearly three times as great.

Aside from the impressive visible physical developments embodied in the modern mill and mine of Lake Asbestos, the progressive attitude of management is found in yet another area. Having entered a field that is new for Asarco, the firm is maintaining the same approach in terms of investment in research and technical services for its new product, asbestos, as it has for years in its other productive fields. At the firm's central research laboratories in South Plainfield, N. J., a special research staff has already been set up to aid customers in solving asbestos application problems, to develop more efficient use methods, and to undertake several fundamental research projects.

Flow of finished asbestos fibers from storage bins to packers in the bagging area is controlled from this panel.

Jiminez Presidential Candidate Of National Management Assn.

Victor P. Jiminez, administrative assistant to the chief corporate engineer, Vulcan Materials Company, Birmingham, Ala., has been nominated for the post of president of the National Management Association for 1959.

Mr. Jiminez was named Man of the Year in 1957 by the Alabama Council which he has served as secretary-treasurer and president. Locally, he has held the posts of treasurer, secretary, vice-president and president. He has also served as national director, national vice-president and on major national committees.

The National Management Association has over 7,700 members in all sections of the country, representing 362 of the nation's major companies.

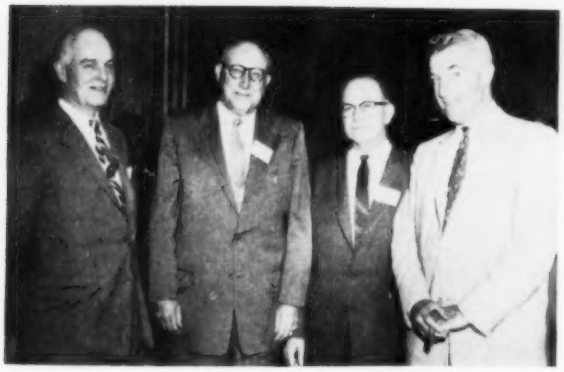
Soil-Cement Paving Awards Reach All-Time High in 1958

The Portland Cement Association reported recently that soil-cement paving awards, with a total of 22,310,000 sq. yd., reached an all-time high during the first six months of 1958, surpassing the same period in 1957 by more than 8,000,000 sq. yd.

An increase of 7,000,000 sq. yd. over 1957 totals was reported in awards for soil-cement roads and streets.

The 1958 awards were nearly double the 11,860,000 sq. yd. reported for the first half of 1957.

Allied Topics Studied at Meeting Of Empire State S.G.-R.M.A.



Officers of the Empire State Sand, Gravel and Ready Mix Association: Harold Keahon (Pearl River), secretary; G. R. Krom (Newburgh), president; Harold A. Putnam (Potsdam), vice-president; and R. M. Burges (Canajoharie), treasurer.

SERIOUS discussion of the several major problems affecting the future progress of their respective industries characterized the Fall meeting of the Empire State Sand, Gravel and Ready Mix Association, held at the Concord Hotel, Lake Kiamesha, N. Y., on October 16, 17, and 18. As is customary in these meetings, those present took full advantage of the superb recreational facilities offered, enjoying the autumn sports of the Catskills, during free hours.

The main sessions, held on one day of the meeting, covered subjects of special interest to the aggregate producers in the morning and topics dealing with ready-mixed concrete in the afternoon meeting. Speakers discussed public relations, group insurance, lightweight aggregates, production problems, prestressed concrete and its relation to ready-mix, concrete specifications, and the newest developments in transit mixers.

George R. Krom, Windsor Building Supplies Co., Inc., Newburgh, N. Y., president of the association, was in general charge of both sessions. Hugh McCracken, Gallagher Bros. Sand and Gravel Corporation, New York, chairman of the aggregate committee, handled the morning meeting, and William F. Maginn, chairman of the ready-mix committee, presided at the afternoon session.

American Aggregates Corporation, Greenville, Ohio, presented an excellent film, entitled *Rumor*, which depicted typical actions taken by citizens to oppose a contemplated aggregate production, on the mistaken notion that it would create a community impairment. The story of how these wrong presumptions were corrected and the community assured that the new sand and gravel pit would prove a community asset, both from an economic and aesthetic standpoint, makes a film worthy of a showing wherever a similar situation is encountered. Impending legislation in many spots throughout the country threaten the aggregate production industries today, and the showing of films such as this one would go far toward presenting the true facts involved in each case.

Donald D. Roe, Laverack and Haines, Inc., Buffalo, N. Y., presented a discussion of the mechanics, activities, and benefits available to a member participant of the New York State Mineral Aggregates Compensation Insurance Group No. 85. Underwritten by the state, this plan has become most successful in acting as the liaison agent between member employers, carriers, and employees in compensation claims.

Joseph J. Shideler, Portland Cement Association, Chicago, Ill., told of recent developments in and applications of lightweight aggregates and concrete production fields. He showed a series of slides on tests and on installations of rotary kilns and sintering beds for producing lightweight aggregates, used extensively in structural concrete and for concrete block production.

During a panel typical plant problems of an aggregate producer were discussed, including equipment for the recovery of fines, ponding problems, spillage from trucks, and similar matters affecting good public relations. Members of the panel were Eugene DeWitt, B. R. DeWitt, Inc., Pavilion; R. T. Franklin, Central Materials Company, Owego; E. P. Kolb, Windsor Building Supplies Co., Inc., Newburgh; and Paul E. Robinson, J. W. Robinson & Son, Auburn.

Roy L. Peck, editor, MODERN CONCRETE, Chicago, Ill., presented a talk on *Prestressing and Ready Mix*, emphasizing the close relationship of these two segments of the concrete industries, and pointing out how each might benefit in the future by effecting definite business connections at the local level. Many members of the ready-mixed concrete industry have already taken steps to enter this new field.

The engineering and production phases of prestressing were presented for one of the ready-mix members of the Association that has recently engaged in prestressing. Ad Blondeel and Herb Weiner, chief engineer, both of the Ernil Prestressed Concrete Company, an affiliate of Samuel Braen, Inc., Warwick, N. Y., told of their firm's experiences in this combined field.

Perry H. Peterson, director of engineering, Master Builders Company, Cleveland, Ohio, spoke on concrete specifications, and distributed a suggested brief specification conforming with existing A.S.T.M. standards, which he declared would be sufficient to meet all requirements for ready-mix materials, installations, tests, and acceptance.

Advantages of present-day equipment in transit-truck mixers, especially their ability to handle the low-slump consistencies required in paving and prestressed concrete, were related by members of a panel consisting of David Lovejoy, Chain Belt Company, Milwaukee, Wis.; Graham Ross, Worthington Corporation, Plainfield, N. J.; and L. H. DeVilling and R. E. Hoppenrath, Blaw-Knox Co., Pittsburgh, Pa.

New Sand-Gravel Plant Of Campbell Sons' Corp. Distinguished by

twin processing flows
multi-stage blending
sand-gravel splitting, reblending
central departmental controls
effective clay removal
silo and stockpile storage

By WALTER E. TRAUFFER

SEVERAL years ago it became apparent to the management of the Harry T. Campbell Sons' Corporation of Towson, Md., that it would soon be forced to modernize and expand its existing sand and gravel plant or build a new one. Reasons for a change were economic, plus the necessity for greater capacity, better aggregate, better gradation, and a wider range of sizes than the old plant could produce. Specifications were becoming increasingly stringent, special sizes were being required for new products, demand was steadily increasing, and the competition of other building materials made it imperative to reduce production costs. After considering all angles, it was decided to build a new plant.

The major problem with the old plant was that it could not produce a sand with consistent gradation or fineness modulus from deposits which varied widely from day to day or even from truckload to truckload. For this reason, it was decided to split the sand into three fractions (½-in. to 30-mesh, ⅛-in. to 80-mesh, and 30- to 150-mesh) in the new plant, and blend them back together to make the desired products. This system, with a uniform gradation of material going to each of three sand stockpiles, balances any variation in the material fed to the plant—only the quantity will vary.

The gradation of the gravel in the deposits also varies widely from hour to hour, and here also the old plant lacked the flexibility and control necessary to produce consistent products. In the new plant more and sharper splits are made. Four sizes are stored in silos and recombined to make the four products most in demand — 2½- to 1¼-in.; 1¼- to ¾-in.; 1- to ⅝-in.; ⅝- to ¼-in. gravel splits. An optional fifth gravel split is ⅜- to ¼-in. The use of multiple calibrated gates under each silo helps make it possible to blend out many other desired sizes without changing screen cloth.

Although the new plant has more than double the capacity of the old one — 700 tons, compared to 250 t.p.h. — it requires less manpower. Only 20 men are required compared to 35, including the pit, as well as the plant. Approximately the same equipment is used in the pit, but the tunnel reclaiming system has

This aerial view of the White Marsh plant, taken before construction had been completed, shows (left background) the truck hopper and the tunnel under the highway to the scalping station. In the foreground are the truck-loading silos and some of the water-settling ponds.

eliminated three cranes that handled ground-stored finished products.

The first half of this plant which went into operation June 1, 1958, soon exceeded its designed capacity of 300 t.p.h., getting up to 400 t.p.h. when the sand aggregate ratio would stay in minus 70 percent plus 30 percent range. The use of a raw surge pile aided this uniform ratio greatly, which considerably exceeded the best output of the old plant. The second half of the plant went into operation in September, giving a total capacity of 700 t.p.h. plus.

The successful performance of this plant from the day it started was no accident but was due to careful planning. The need for this plant had been recognized for some time, and the decision to build it was made four years ago. Preparatory to designing the plant, the late Richard L. Campbell, then a vice-president of the company and graduate civil engineer from Cornell, went on a trip about the country visiting and studying other outstanding plants. Then, with the help of John S. Walker, plant engineer, he designed the plant to incorporate the best features found in other operations, plus a number of original ideas. Others also co-operated in the design—particularly Robert F. Porter, likewise an engineer, who as vice-president of material sales acted as general advisor of the project, along with Herbert C. Cullison, his assistant, and Thomas E. Elliott, general superintendent of the White Marsh Division.

Mr. Campbell and Mr. Walker also supervised the construction of the plant, which was started in April, 1957, and completed on June 1, 1958. The design of the steel structure was done by Robert Q. Herring; and all electrical work was installed by the company's forces, headed by Clayton Brown, Campbell's chief electrician. All construction and shop work was also completed by Campbell personnel, with the exception of the erection of the stave silos and the steel work on top of the silos. Company workers did the excavation, concrete work, conveyor erection, chute work, machinery and drive erection, pipe work and plumbing, etc.

Opposite page: In this panoramic view are (left to right): the scalping station, the surge stockpile, the screening-and-processing building, and the truck-loading silos.

Features The features of this new plant are many, all of which will be described in detail, but there are several basic ones. A rough blend is made at the pit by hauling in from several deposits. The use of multiple truck hoppers effects further blending. A raw surge pile insures against plant delays due to trouble at the pit and *vice versa*, and does some further blending.

The main processing plant is a double one, with identical processing units placed side by side. In case of trouble on either side of the plant, the other half continues to operate, and there are other advantages. This arrangement not only makes possible maximum production when it is needed but also permits economical production at lower capacities. For

the same reason there are two feeders under the raw surge pile, and wash water is provided by individual pumps for each half of the plant.

As has been stated, the sand is split into three fractions and the gravel into five fractions, and these are reblended as desired to tunnel reclaiming conveyors.

Material is reclaimed by conveyor belt to truck-loading bins at the rate of 1,000 t.p.h. and the entire blending and loading operation is controlled by one man from a panel.

The location of the screening and washing equipment over the gravel silos made an unusually high structure, and elevating the material to such heights is usually avoided. It was felt by the designers, however, that this was justified by the reduction of the plant area, and of the length and number of conveyors required; the design also makes possible larger stockpiles and requires less personnel. An unusual feature in this building is the 1,000-lb. capacity freight elevator which paid for itself in the erection of the plant. It now serves several purposes, including transportation of personnel.

Throughout the plant all conveyors are designed to handle considerably more than present capacity, and space has been left for additional processing units. There are no unnecessary overcapacities, and no bottlenecks have developed.

The entire plant is of steel and concrete construction. Expanded metal flooring is used because it is easier to keep clean and because equipment is visible from above.

This view shows a 35-ton truck discharging raw material into a hopper, also the clay breaker and belt feeder above the No. 1 conveyor feed.

The screening building, with some of the stockpiling conveyors. On the near side of the building is the enclosure for the 1,000-lb. capacity freight and passenger elevator.

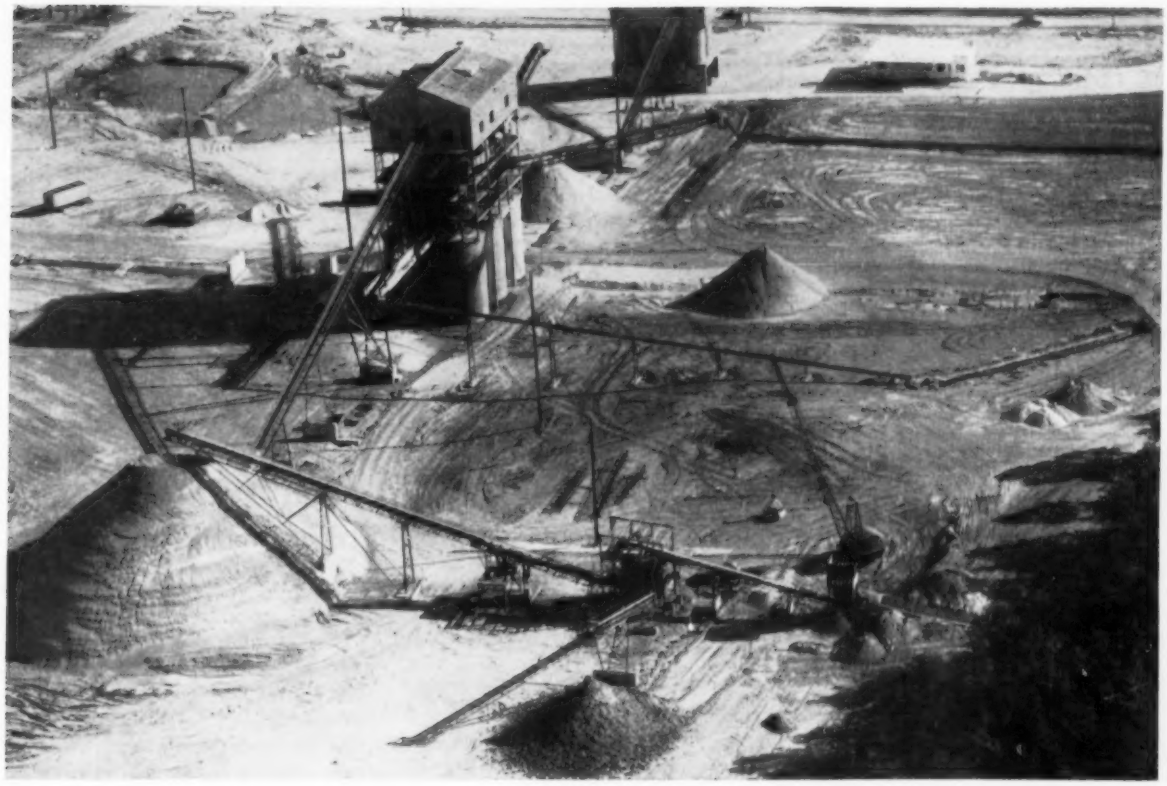
Control The plant is operated from three separate control stations for the three distinctly separate parts of the plant. A station at the scalping building controls everything from the truck hopper to the main surge stockpile. A station at the main building controls all operations from the feeders under the surge pile on through to storing the finished products. A third station, in the loading building, controls reclamation, blending, final storage, and loading. Automatic sequence stopping is used throughout to halt all equipment in a department ahead of any breakdown or stoppage. This setup includes even the pumps supplying process water.

Deposit The deposit is similar to others in the area which the company has been mining for many years. Those around the plant site total 1,800 acres, and another 300-acre tract is also held. The gravel bed is from 4 to 40 ft. thick, and some of it is below water level. There is an abundance of fine sand and small gravel, but in some places there is considerable coarse gravel. As elsewhere in this area, the deposit is fairly clean, free from silt, mica, and organic substances; and the gravel is hard, with very little soft material. There is some clay in lumps or coating the material, and there are occasional clay strata.

Material Recovery Mining is actually being done simultaneously at three different locations. The No. 1 operation is actually finishing up the old pit. There a combination of coarse and fine material is loaded out with a number 801 Lima crane with a 2½-cu. yd. dragline bucket.

The No. 2 location has coarse and fine areas and is used to hold the desired 60-40% sand aggregate ratio. A Model 8 Northwest equipped with a 2-cu. yd. dragline is used there.

The No. 3 location is fairly well



Another aerial view, showing the scalping station and the raw surge pile (foreground). The reclaiming tunnels on four sides of the screening tower are visible.

balanced and is counted on to supply the bulk of future production. At present a Model 6 Northwest equipped with a 2½-cu. yd. shovel is used there. Later operations will be consolidated and fewer and larger rigs will be used.

Hauling to the plant is done by a fleet of ten units. Two of these are 40-ton capacity Macks, five are 18-ton Macks, and recently put into service are three DW-20's equipped with 50-ton capacity Athey bottom-dump wagons. The use of the bottom-dump wagons has made it possible to haul enough material to the new plant when running at a full production of 700 t.p.h. It required 14 smaller units to deliver the same amount of material to the new plant. Because of the longer haul and the crossing of busy Highway U.S. 40, it also required 14 small units to haul to the old plant, which produced less than half the tonnage of the new plant. The haul now is one-half to two miles over company roads which were built on run-of-bank material, oil treated and sprayed to hold down the dust. The scalped oversize from the new plant is now being used for sub-base for future haul roads.

Feed To Plant The trucks run over and dump into either of the two 75-ton raw material hoppers. This arrangement eliminates any possibility of delays in dumping and effects additional blending. (A third and fourth hopper may later be installed.) Over the hoppers are 4-in. steel ship channels, spaced 6 in. apart, which serve only as runways for the trucks, and not as grizzlies. Any lumps of clay and occasional slabs of iron crustation are squeezed through by the truck tires. The few boulders are lifted out.

Under the channels in each hopper is a modified logwasher known as a claybreaker, built by McLanahan & Stone Corporation to Campbell's design. This unit has two 6-ft. paddle sections which chop up lumps of clay, ore, etc. The claybreakers are reversible; in case a boulder does get in, it can be picked out. They also keep the material agitated, so that there is a steady flow to the 42-in. by 9-ft. belt feeder under the hopper. The claybreakers are driven through V-belts by 15-hp. motors equipped with Twin Disc Hydrosheaves to provide protection if they are jammed with a boulder. The claybreaker for No. 2 hopper, a rebuilt pug mill slowed down to 17 r.p.m., has proved very satisfactory.

Clay Scalping Under the hoppers is a 340-ft. reclaiming tunnel extending beneath State Highway No. 7, which separates the deposit and the plant. This arrangement was made in preference to the danger and delay of having trucks cross the heavily traveled highway. The first 200 ft. of the tunnel is concrete and the last 150 ft. is 84-in.-diameter Armco corrugated culvert pipe. In the tunnel is a 36-in. by 450-ft. belt conveyor (No. 1) which has a capacity of 600 t.p.h. This belt can be speeded up to 800 t.p.h. if necessary. It inclines from the tunnel to the scalping house, where it discharges on a 5- by 12-ft. Tyler Ty-Rock F-600 two-deck scalping screen. This is a dry screening op-

eration. On the top deck this screen has 4 ft. of 2½-in., and 8 ft. of 5-in. square perforated plate. The bottom deck has 2⅝-in. wire cloth. The material over both decks (plus 2½-in.) contains most of the clay and goes *via* 24-in. by 100-ft. conveyor No. 12 to a stockpile as waste. This constitutes about 2 percent of the total material. A crusher and return belt can be installed to salvage the oversize, should this be desirable.

Raw Surge Storage Minus 2½-in. material through the bottom deck of the scalping screen is carried on 36-in. by 200-ft. inclined belt conveyor No. 2 to the 20,000-ton capacity raw surge pile, discharging from a height of 60 ft. This pile has a live capacity of 7,000 tons, reclaimable through a tunnel; and with the help of a bulldozer this pile can keep the plant operating for three to four days. This surge pile also serves to blend the material and make it more uniform.

Two 42-in. by 9-ft. belt feeders in the roof of the concrete tunnel discharge the material on 36-in. by 375-ft. inclined belt conveyor No. 3 to the top of the screen house. This conveyor also has a capacity of 600 t.p.h., but can be speeded up to carry 900 t.p.h.

Preliminary Screening From this point on this is a dual plant operation, with two identical flows operating entirely independently. The material discharged from belt conveyor No. 3 is discharged into a box, where water is added from two 6-in. lines. This addition makes a slurry for better flow and soaks the material for further separation. The slurry is split through two chutes to a pair of 5- by 12-ft. Ty-Rock F-600 two-deck sand screens. Each screen has 4 ft. of 1-in. plate and 8 ft. of 1-in. wire on the top deck and 10 ft. of $\frac{3}{16}$-in. and 2 ft. of ½-in. wire on the bottom deck. The top deck serves only to break the impact of the material on the bottom deck.

Sand Processing Minus $\frac{3}{16}$-in. material through the bottom deck of the two sand screens goes to a pair of 10- by 20-ft., 6-gate Eagle Iron Works scalping tanks. These units have triple-flume collectors, but at present only two splits are being made. Studies are being made to use the third flume to make special sands. Overflow from these tanks goes *via* a flume to a 2-ft. diameter by 20-ft. high standpipe. This gives the required pressure (10 lb.) for the set of three 24-in. diameter, 20-deg. Dorrclones to operate, and eliminates the 8-in., 75-hp. sand pump which would otherwise be required.

The Dorrclones are set at about 12 deg. off horizontal. This makes them self-draining, a special advantage for winter operation. The 30- to 150-mesh fine sand product (F.M. 1.25) from the Dorrclones drops from a height of 40 ft. to a 10,000-ton stockpile over the main reclaiming tunnel. This product is about 10 percent of the total sand production. The scalping tanks are shorter than normal in order to get a coarser overflow, which results in a sharper split in the medium and coarse fractions.

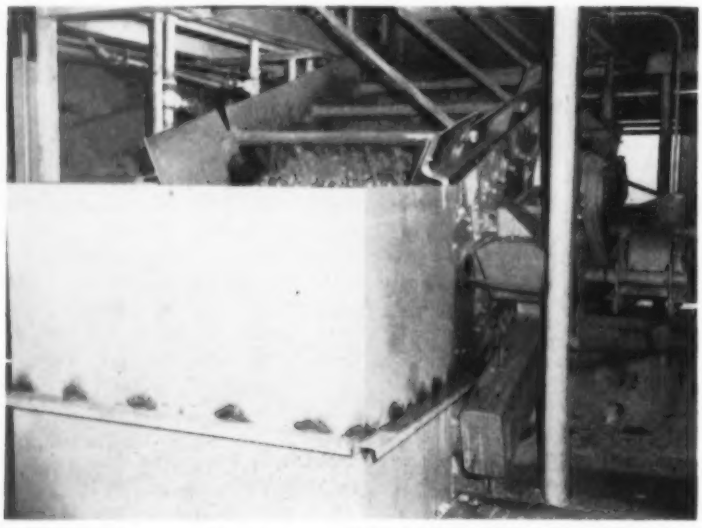
The ¼-in. to 30-mesh coarse sand (F.M. 3.75) from the first two valves of each scalping tank is flumed to a 30-in. diameter by 25-ft. long Eagle single-screw dewaterer. A 24-in. by 125-ft. belt conveyor (No. 6) carries this product from both screws to a 40,000-ton stockpile over the main reclaiming tunnel. This conveyor is inclined and discharges from a height of 65 ft. It is supported by wire cable from the plant structure, eliminating the stresses to which the usual buried conveyor supports are subjected.

The 8- to 80-mesh medium sand (F.M. 2.10) from the last four valves of each scalping tank goes to a 44-in. by 32-ft. Eagle single-screw dewaterer. A 30-in. by 140-ft. inclined belt conveyor (No. 7) discharges the product from a height of 85 ft. to a 60,000-ton stockpile over the tunnel. This conveyor is also cable supported.

Gravel Processing Material through the ½-in. section of the bottom decks of the sand screens is bled direct to the finishing screens, by-passing the log washers, to avoid overloading them.

Gravel over both decks of each sand screen (½-in. to 2-in.) goes to one of a pair of 12-in. by 30-ft. McLanahan dual log washers, which break up clay and scrub any coated material; the resulting slime overflows. Gravel from the two log washers is discharged, along with the $\frac{3}{16}$- to ½-in. gravel coming direct from the sand screen, onto 30-in. by 30-ft. parallel transfer conveyors No. 4 and 5 to a pair of 4- by 8-ft. Ty-Rock F-600 two-deck primary finishing screens. These have 4 ft. of $1\frac{5}{16}$-in. perforated plate and 4 ft. of 1½-in. wire cloth on the top decks, and $1\frac{5}{16}$-in. wire cloth on the bottom decks.

The two screens make two of the four splits of gravel—2½- to 1¼-in. and 1¼- to ¾-in.—which are chuted to silos No. 1 and 2 of six 900-ton concrete silos over the main reclaiming tunnel. These silos are 25 ft. in diameter by 40 ft. high.



One of the six spray-equipped screens which do the gravel sizing in this plant.

Material through the bottom decks of these two screens is chuted to a pair of 5- by 12-ft. Ty-Rock F-600 two-deck secondary finishing screens. The latter make the other two splits of gravel; and they are larger screens as these are finer and larger volume items. They have $1\frac{1}{16}$-in. wire cloth on their top decks, and on their bottom decks 10 ft. of $\frac{1}{16}$-by $\frac{5}{16}$-in. and 2 ft. of $\frac{3}{8}$-in. wire cloth—the former for dewatering, the latter so that $\frac{3}{18}$-in. grit can be bled off at any time by flopping a gate.

The grit from both screens is carried on a 24-in. by 150-ft. belt conveyor (No. 18) to a 5,000-ton stockpile over the main tunnel.

Oversize from these screens (1- to $\frac{5}{8}$-in.) is chuted to silos No. 3 and 4. The $\frac{5}{8}$-in. to No. 4 material over the bottom decks is chuted to silos No. 5 and 6, which, when full, overflow to a conveyor discharging to a 15,000-ton stockpile. This conveyor is supported at the head end by a stone ladder.

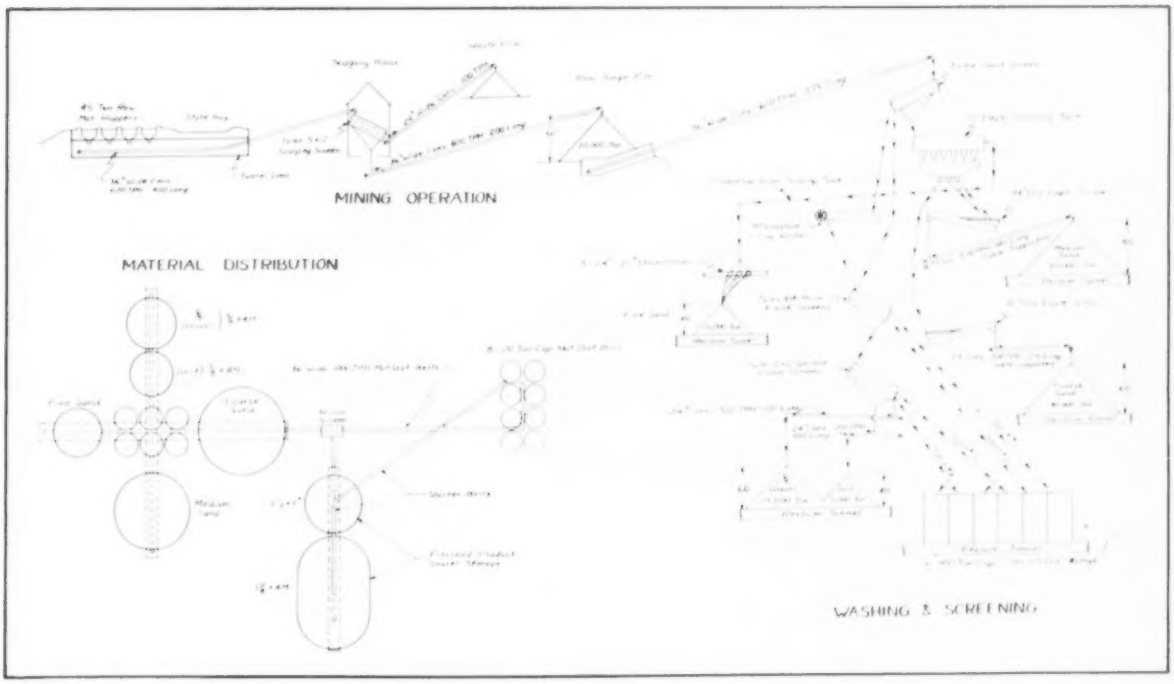
Tunnel Reclaiming System The tunnel storage system actually consists of three tunnels—a main tunnel which runs lengthwise of the plant and two feeder tunnels at right angles to it. Over one feeder is the medium sand stockpile, and over the other the $\frac{5}{8}$-in. gravel and grit stockpiles. At the back end of the main tunnel is the fine sand stockpile—and at the point where the two feeder conveyors come in, are the six gravel silos. Beyond the silos is the coarse sand stockpile. At the end of each tunnel a 24-in. pipe protrudes above ground level. These pipes provide for the circulation of air; they can also be used as escape hatches if they should ever be necessary for such a purpose. Every material opening in the tunnels has a crown 1 ft. higher than the tunnel, to keep water from seeping in at the gates.

Under the medium sand stockpile there are 12 20- by 20-in. clamshell gates—single solenoid air-operated—discharging on a 30-in. by 250-ft., 700 t.p.h. reclaiming conveyor 10A. The $\frac{5}{8}$-in. gravel and grit have similar gates—4 and 3, respectively—discharging on 30-in. by 250-ft., 700 t.p.h. reclaiming conveyor 10B. The fine sand discharges onto the main reclaiming conveyor (8A) by means of 24-in. by 9-ft. 0-in. belt feeders. These permit the use of large (2- by 5-ft.) openings which reduce the possibility of the sand arching. There are 12 gates under each of the six gravel storage silos and eight under the coarse sand stockpile, also over conveyor 8A. The clamshell gates are single solenoid air-operated, so that in case of power failure enough air is left to close them, and in this way to prevent flooding.

All gates and feeders are controlled by one man who operates the blending panel board at the top of the loading bins. This board has over 100 switches, which make it possible to establish any desired blending ratio. The blending is actually done by gate proportioning controlled from this board. For example, two gates of medium sand, one gate coarse sand, and one feeder of fine sand make a concrete sand blend. Such a combination can be set on the board and left all day as long as there is material on the tunnel.

If material runs out at any hole, a paddle rises and trips a mercury switch; a bell rings, and a light signal, showing which gate is "out," is given at the board. The operator then selects another gate under the same pile. Any of the gates can also be mechanically blocked in any of four positions—full, ¾, ½, and ¼ open—for more accurate blending. This is done once, manually, and

Flowsheet elevation of the entire plant and plan drawing of material storage and reclamation system.



stays that way. Six different sand mixes can be set up on the board by selecting the appropriate gates under the various stockpiles. The conduits through which the gates are controlled carry a double set of cables, so that, in case of failure of one set of lines, a switch can be thrown to continue gate operation.

The same system is used for blending coarse aggregates to make the desired products. These are similarly set up on the gravel blending section of the control panel. At present, provision is made for seven different products.

Storage and Loading Reclaiming conveyors 10A and 10B both discharge on main conveyor 8A, which is 36 in. wide and 450 ft. long and has a capacity of 1,000 t.p.h. It discharges to 36-in. by 175-ft., 1,000 t.p.h. inclined conveyor 8B to the top of the loading silos. A power-operated turnhead controlled from the board discharges into any of the first four of the eight 120-ton steel tanks. Two of these are now being used for concrete sand, one for washed sand, and one for grit. A 42-in. by 25-ft. inclined belt conveyor (No. 11) feeds to a similar turnhead feeding the other four tanks. Two of these are being used for ¾-in. gravel, one for ⅝-in. gravel and one for 2½- to 1-in. gravel. Provision is also made for chutes to future low bins for storing special materials.

Trucks are loaded through two 20- by 20-in. manually-actuated, air-operated clamshell gates under each tank for fast loading. Two trucks or trailers can be loaded at one time under the two rows of tanks. The loaded trucks are then driven to the scale house, where there is a Howe truck scale with a 50-ft. platform. The scale house is so designed that a truck driver need not leave his seat to get his ticket. A 34-ft. scale from the old plant will be installed for added capacity.

Water Supply Wash water for the plant is supplied from a fresh-water pond by two 8- by 10-in. 2,500 g.p.m. Gould centrifugal pumps driven by 200-hp. Continental motors. Space has been left for a third pump. Each pump serves one-half of the plant. The water flows 1,200 ft. in a 16-in. supply line, which furnishes secondary lines to the screens, log washers, scalping tanks, screw bearings, etc.

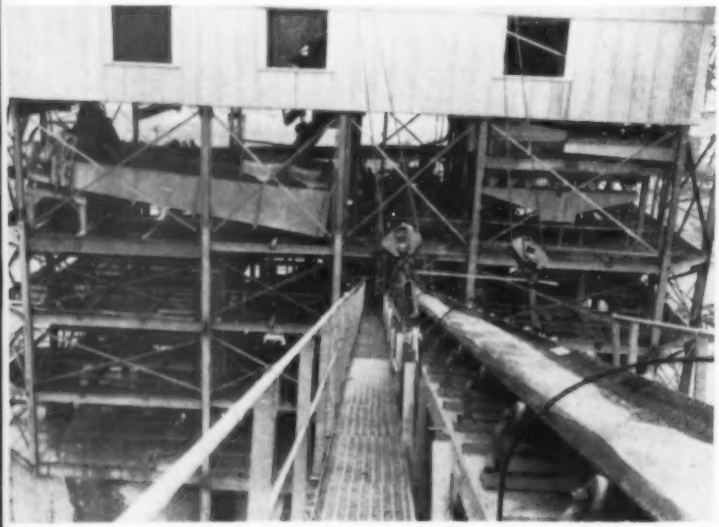
By careful planning, the designers arranged so that a small creek, which is low during the dry season, supplies all plant needs. This is accomplished by a system which returns 75 to 80 percent of the waste water for re-use. Water overflowing the Dorrclones, screw dewaterers, log washers, screens, etc., goes to a 150- by 200-ft. elliptical primary settling pond, where most of the fines drop in a small area for convenience in cleaning out. The water then flows successively to three larger ponds of 150,000-, 100,000-, and 75,000-sq. ft. area respectively. These have berms at their far ends for the longest possible travel. The last one overflows to the 3,000,000-gal. fresh-water pond, which also receives the creek water.

Drainage from the stockpiles goes through drain tile in gravel alongside the tunnel to drains also feeding the fresh-water pond. Weep holes into the tunnel supplement these in an emergency. This system ensures an ample water supply and eliminates water disposal problems.

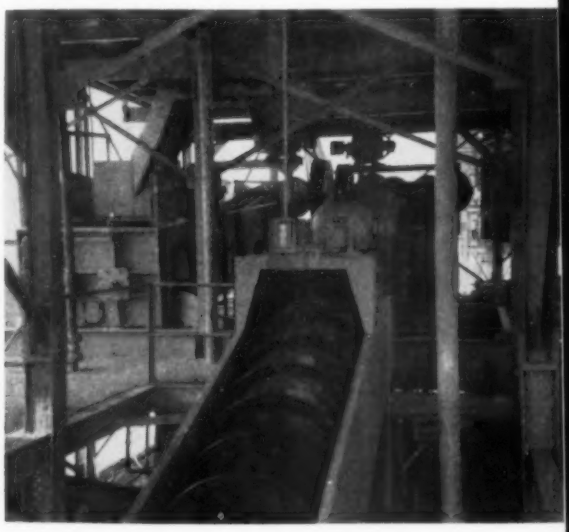
Miscellaneous The drives in this plant follow standard practice except for several of the conveyor drives. The No. 2 conveyor from the scalping house to the raw surge pile has a wrapped drive on the return side of the belt, and is driven by a 75-hp., 1,200 r.p.m. Continental induction motor through a 9 DGA Falk parallel shaft reducer and a Twin Disc fluid coupling which makes it possible to start the motor across the line even when the conveyor is loaded.

The No. 3 conveyor from the surge pile to the main building is driven by a 125-hp., 1,200 r.p.m. Continental induction motor, through a 10 DGA Falk parallel shaft reducer and a Twin Disc fluid coupling.

This view of the processing building shows the gravel log washers and the screens (left) and the sand scalping tanks and dewatering screws (right).



One of the single-screw sand dewaterers, with the two log washers (background) which break up clay.



Conveyor No. 8B from the reclaiming tunnels to the loading bins is driven by a 60-hp. Continental motor, an 8 DGA Falk reducer, and a Twin Disc fluid coupling.

All the other conveyors are driven by Continental motors of 7½- to 50-hp. through Falk reducers. All electric wiring is overhead except that to the pump-house.

The drives on the log washers are 75-hp. slipring motors with drawn control starting. All of the conveyor belts, idlers, etc., are Hewitt-Robins. The clamshell gates in the reclaiming tunnels were supplied by Aggregates Equipment Co.

Everything possible has been done by the company to promote good will with neighbors and the entire community. At its worked-out deposits, ponds and pits have been filled in. In one location an old pond is now a landing strip. Where these properties border on the main highway, trees and rose bushes have been planted; and such ground is now valuable land for business sites. Similar procedures are planned at the present location.

Other Operations This new plant is located not far from the yard which the company has operated for many years at White Marsh on heavily-traveled U.S. Route No. 40. There the company has ready-mixed concrete, aggregate bituminizing, and Sakrete plants, as well as shops, garages, etc. Between the new plant and the yard are the mainline B&O railroad tracks, which must be crossed by trucks hauling out of the new plant. To eliminate crossing over the tracks, the company made use of a large tunnel for White Marsh Creek which is wide enough for two-way traffic. A pipe was laid to carry normal water flow, and a concrete pavement was laid over it and back 500 ft. to the old crossing. The grade crossing is now blocked off, and is used only when an unusually heavy rain blocks off the tunnel for a few hours.

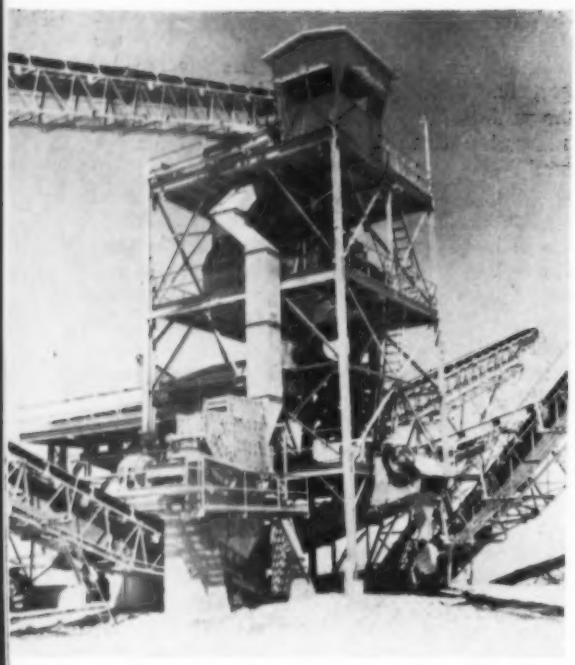
Campbell is its own biggest customer, using about 300,000 tons of sand and gravel annually in its ready-mixed concrete, Sakrete, black top, and other plants. In the Baltimore area it has four ready-mix plants, one for Sakrete, two smaller sand and gravel plants, and three black top installations. A large crushed stone plant and one producing calcite are located at Texas, Md. Recently acquired is another crushed stone plant at Marriottsville, Md. The company also has six other Sakrete plants which serve the 17 eastern states. The main office is centrally located among the Baltimore area operations at Towson, Maryland.

Bruce S. Campbell Jr., grandson of the founder of the company, has recently been made president.

This view of the screening building shows the cyclone sand separators and the flume which carries all wash water to the settling ponds for re-use.

Left: The three 24-in. dia., 20-deg. cyclone sand separators which are set 12 deg. off horizontal for self drainage. A 20-ft. high standpipe provides the necessary pressure.

Right: The blending panel board over the truck-loading bins has more than 100 switches to make any desired blends. Any set combination will be blended until it is changed.



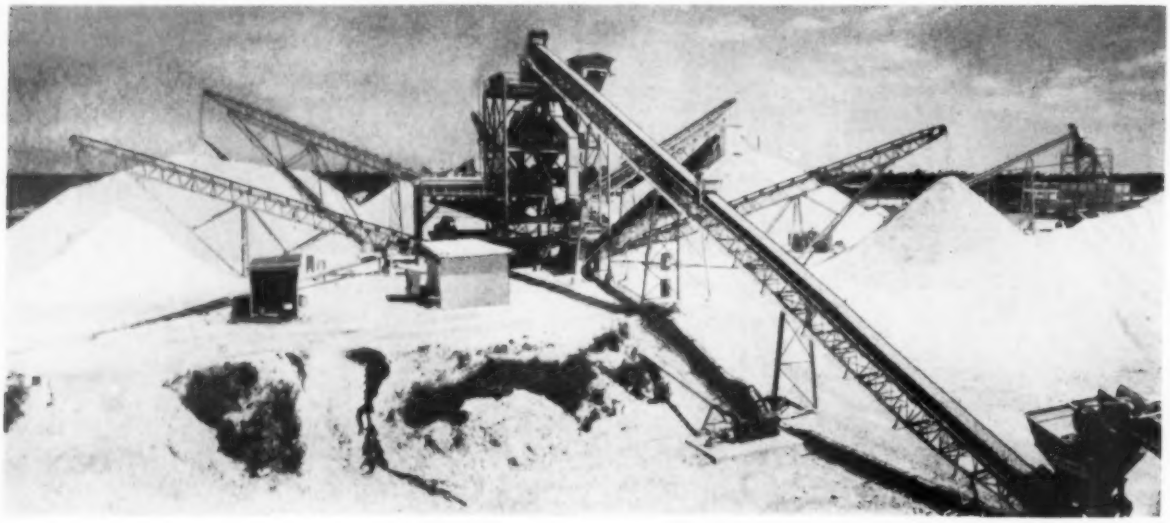
A view of the screening tower, with the plant control station above. The secondary crusher is in foreground, and behind it are the sand scalping tank and washing screws.

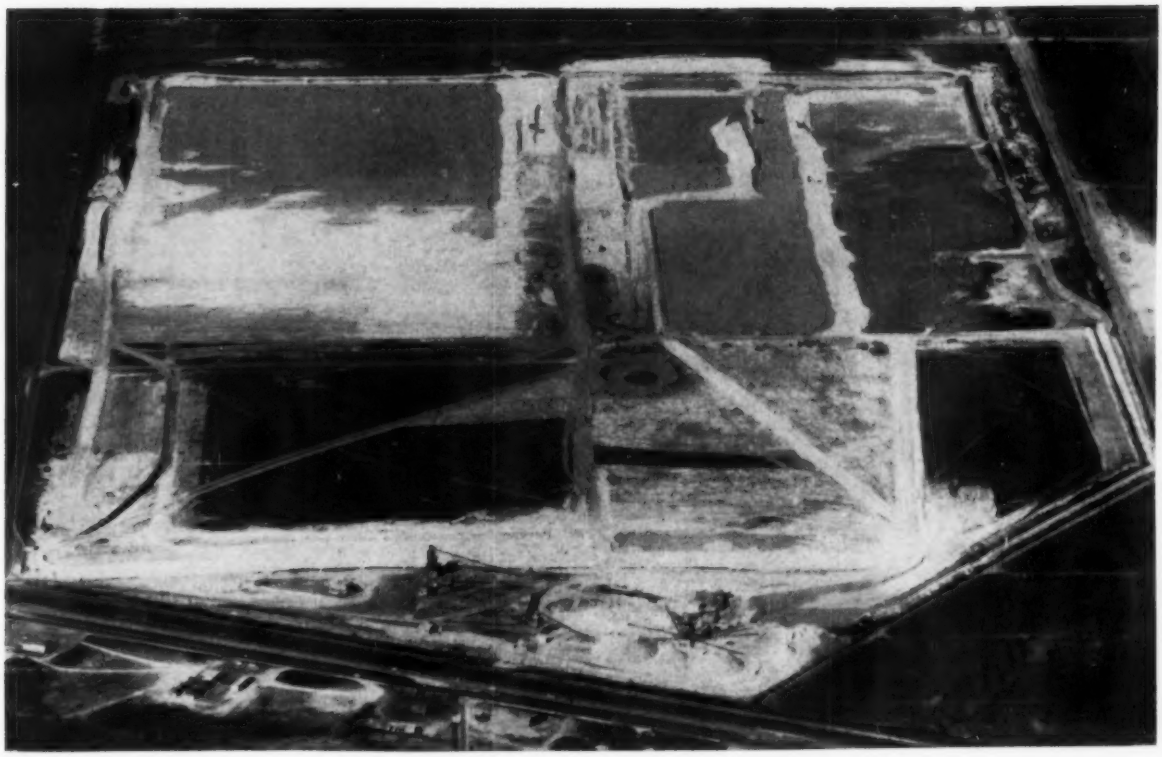
Opposite page: This aerial view shows the manner in which the 300-acre Rockdale property is being developed to leave setbacks for future residential development. The lake (right) is now being worked. Aggregate and ready-mix plants in the foreground are accessible to U. S. Highway No. 1 and the railroad main line.

New Florida Crushed Stone Plant Features Complete Independence

By WALTER E. TRAUFFER

A general view of the Rockdale plant, with the raw surge hopper in the foreground. Also shown is the screening tower, with the control building for the entire plant. The truck loading tower is in right background.





# of Quarrying, Processing, Shipment

ANOTHER ON THE SPOT REPORT

THE RAPID industrial and residential growth of south Florida has resulted in an unprecedented expansion of the building materials industries there, especially in the last few years. Two new cement plants and a number of aggregates plants have been built recently. Notable among the latter is the very modern and efficient new crushed stone and sand plant of Rockdale Stone, Inc., in the unincorporated town of Rockdale, on U. S. Highway No. 1, 10 miles south of Miami city limits.

This plant, which went into operation in January, 1958, is simple in design without sacrificing flexibility, and it can make any product specified in the Miami area. Designed for a capacity of 250 t.p.h., it actually produces up to 300 t.p.h. Only two men are required to operate this plant, one at the primary crusher and one at the control tower on top of the plant.

This is one of several plants built recently in the rapidly developing area southwest of Miami. The deposit is in the oölitic formation of coral rock which is the chief source of aggregates in this part of Florida. This particular pit had been operated by a railroad for fill and ballast since 1913. It is on a 300-acre property which, in conformance with a 10-year old county ordinance, is being dug to leave setbacks for future residential development. The plan calls for two lakes. The one at the far end of the property is being developed first as it is closest to a growing residential area.

The overburden is very light and this, with 8 to 9 ft. of soft lime rock at the top of the deposit, is being removed by Troup Brothers, a subsidiary of Three Bays Improvement Company, owners of the property, and sold for road base. Tractors with rooters break up this material, and carry-alls move it to a railroad siding, where it is loaded into cars. This material is removed to just above ground water level.

Drilling, blasting, and digging of the hard coral rock is contracted to the parent Three Bays Improvement Company, going down an average of 40 ft. to the sand which underlies the deposit. Drilling is done with a Mayhew rotary rig which has a 40-ft. tower, so that no changing of steel is necessary. A 5½-in. O. D. drag bit is used; this is an 8-point core drill bit with four coal cutters so arranged that no core is made. The rock has a Los Angeles abrasion of about 35, and up to 540

This 2-cu. yd. dragline loads stone from drained windrows to 15-cu. yd. sidedump units for haulage to the plant.

holes have been drilled with one bit. Bit costs average about 23 cents per hole. Only water is used on the drill, and this is provided by a Gardner-Denver pump mounted on the rig.

When a hole is completed, the explosives are loaded through the stem; 40 percent Dupont Red Cross is used in 2-in. sticks. Primacord is attached to one stick for the bottom; then 8 more sticks are inserted with 2-in. dia. by 2-ft. long cardboard tube spacers between some of them. This puts most of the explosive near the bottom, where the rock is hardest. Each hole is loaded with 30 lb. of explosive, the holes are spaced 10 ft. apart, and five or six holes are detonated in single-row shots. A cap is used on each hole, and full second delays are used. The yield is about 3.5 cu. yd. per pound of explosive. A hole can be drilled and loaded in less than 6 minutes. Blasts have been checked by Vibration Measurement Engineers, who are employed on a retainer basis.

Digging of the material is done with an 88B Bucyrus-Erie dragline, with a 100-ft. boom and a 4½-cu. yd. Hendrix heavy-duty bucket, and a 71B Bucyrus-Erie dragline with a 90-ft. boom and a 3-cu. yd. bucket. These units pile the stone in windrows along the bank, where it is left for at least two weeks to dry. A Bucyrus-Erie 38B dragline with a 2-cu. yd. bucket and a torque-converter drive loads to three haulage units. These are Caterpillar DW15 tractors with Athey PD15 side-dump wagons which carry 15-cu. yd. loads.

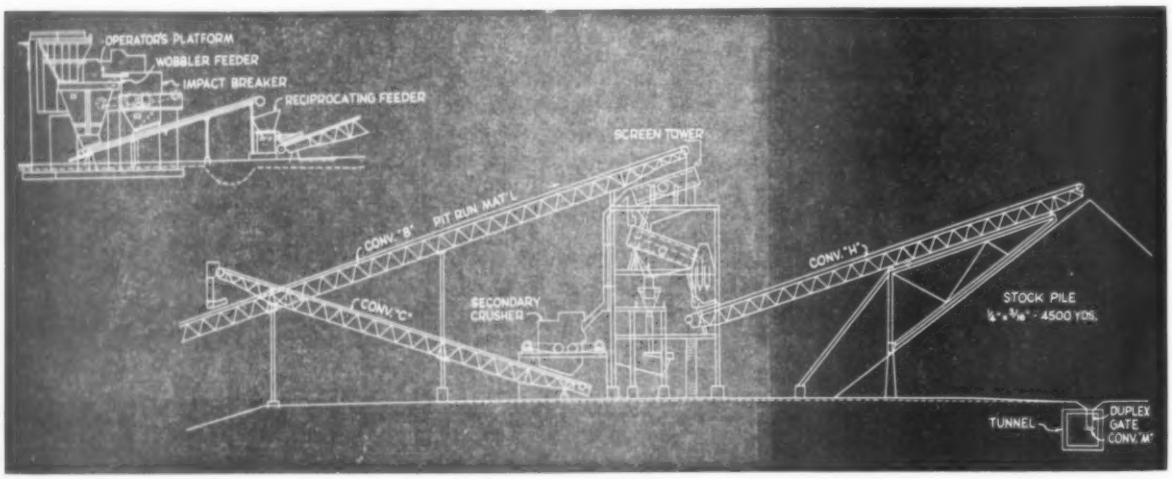
An elevation drawing of the primary crushing and screening buildings.

All are equipped with pneumatic tires. They haul the rock about 4,000 ft. to a semi-circular fill about 36 ft. high, from which they discharge to a 25-cu. yd. hopper.

A 36-in. wide, 16-bar Universal Wobbler feeder with 2-in. minimum spacing and a variable-speed drive reclaims the material from the hopper and removes undersize. The oversize goes to the No. 3645 Universal Impact Master double-impellor primary crusher. These impellors are V-belt driven by 150- and 125-hp. motors. This crusher reduces to 3-in. maximum; and this material, with that passing through the feeder, is carried by a 36-in. by 30-ft. inclined belt conveyor A to a surge hopper.

A plate feeder provides an even flow of material from the hopper to 30-in. by 191-ft. conveyor B to the top of the screening tower. This feeds to a 5- by 14-ft. Robins Vibrex 2-deck screen with ⅞- and 3/16-in. openings. This unit and all the other screens in the plant have high-pressure water sprays. The oversize (plus ⅞-in.) is chuted to a No. 3240 Universal Impact Master crusher having both rotors driven by one 150-hp. motor. The minus ⅞-in. product is returned by 24-in. by 85-ft. belt conveyor C to conveyor B in closed circuit.

Material off the bottom deck is split to a pair of 5- by 14-ft. 3-deck Vibrex screens, which make three sizes of crushed rock. These screens have ½-, ¼- and ⅛-in. openings. Material off the top decks (½- to ⅞-in.) is carried on 18-in. by 137-ft. stacker conveyor J to an 8,500-cu.



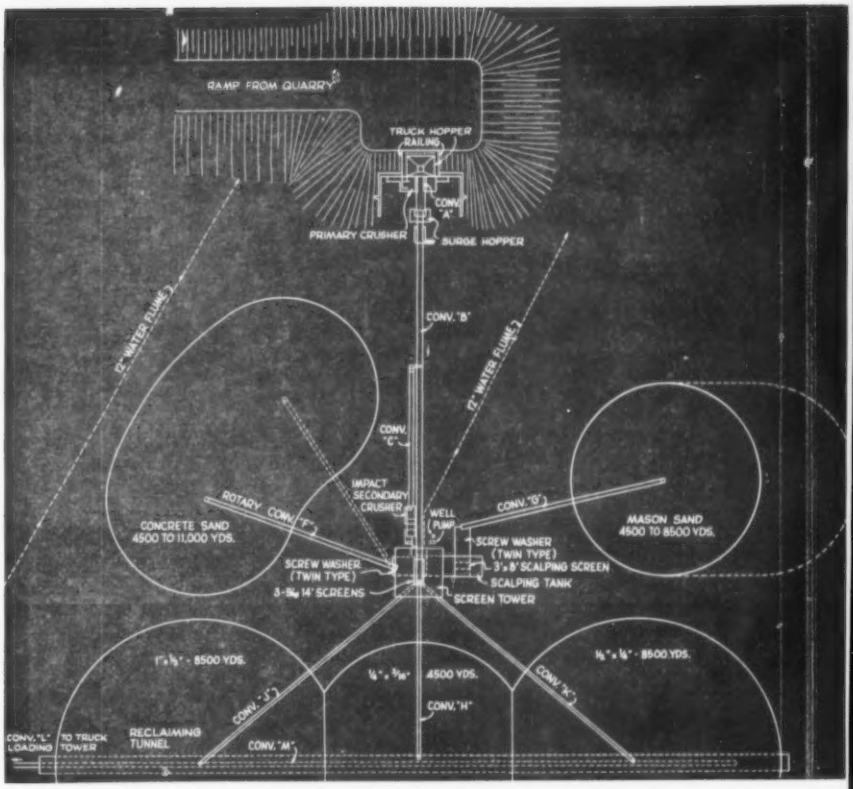
yd. stockpile over one end of a reclaiming tunnel; and that over the second deck (¼- to ½-in.) is carried on 18-in. by 137-ft. conveyor K to another 8,500-cu. yd. stockpile over the other end of the tunnel. Material off the bottom decks of these two screens (⅛- to ¼-in.) is carried on 18-in. by 88-ft. conveyor H to a 4,500-cu. yd. stockpile over the center of the tunnel. The three stockpiling conveyors are of cantilever design, so that they are not affected by any shifting of material in the stockpiles.

Minus $\frac{3}{16}$-in. material through the bottom decks of all three screens is flumed to a 10- by 32-ft., 9-pocket Eagle Iron Works sand scalping tank. This unit has 9 gates which can be adjusted for any desired gradations. One of the three flumes under this tank feeds screenings or concrete sand to a 36-in. by 25-ft. Eagle double-screw dewaterer. A 24-in. by 100-ft. radial stacker conveyor F—self-powered and mounted on a 30-degree arc of rail—discharges to a 4,500-cu. yd. stockpile. Built up to its maximum height, this pile overflows a hill to provide a total of 11,000 cu. yd. of storage. Asphalt sand can be made through this circuit by changing the bottom decks of these screens to 7-mesh.

A second flume under the tank feeds masons' sand to a second 36-in. by 25-ft. Eagle double-screw dewaterer. A 3- by 8-ft. Cedarapids 1-deck screen with 8-mesh openings over this screw scalps off any possible oversize and is insurance against any failure. A 30-in. by 100-ft. belt conveyor G carries the masons' sand to a stockpile, also on the edge of a hill, which has a capacity of 4,500 to 8,500 cu. yd. When the demand for masons' sand is slow, the screen is by-passed and the resulting by-product is sold for fill.

The third flume under the scalping tank handles waste water and sludge.

The reinforced concrete reclaiming tunnel under the three stone stockpiles is 7 ft. high, 7 ft. wide and 360 ft. long. At three openings under each of the three piles manually-adjusted clamshell gates feed on the 24-in. by 277-ft. reclaiming belt conveyor. The latter discharges on 24-in. by 177-ft. inclined conveyor L, which leads to the truck loading



A plan view of the primary crushing and screening departments.

tower. From conveyor L the reclaimed stone is discharged onto a 4- by 12-ft. Vibrex 2-deck rinsing screen equipped with sprays and ½- in and ⅛-in. wire cloth. The stone drops into any of the three 65-cu. yd. hoppers, from which it is loaded through clamshell gates into trucks. At present a 24-in. by 120-ft. conveyor is being installed to permit loading of railroad cars directly from the tunnel and rinsing screen. A 48-car railroad siding has just been completed. Stockpiled sand is loaded into trucks by front-end loaders.

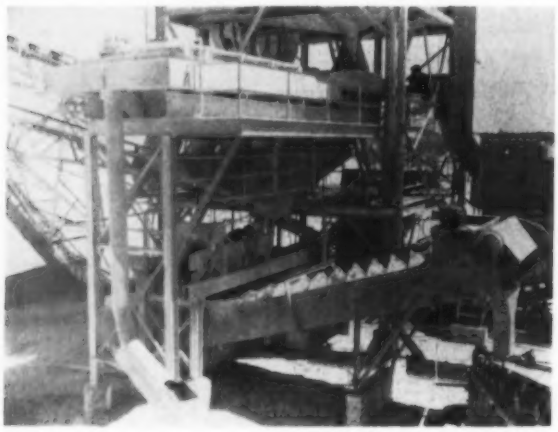
All truck shipments are weighed on a 125,000-lb. capacity Murphy truck scale with a Detecto dial and Printomatic attachment. This scale has a 10- by 50-ft. platform. Some rail shipments are made over the Florida East Coast Railroad. Trucks are used to load the cars with screenings by means of belt conveyors.

This plant requires 2,000 g.p.m. of wash water at 50 lb. pressure, 500 g.p.m. being used by the rinsing screen alone. This water is provided from a 16-in. well with a 125-hp. pump. Waste water and sludge from the rinsing screen, the screw dewaterers, and elsewhere flows to a waste pond from which the water seeps out into the ground. Occasionally the settlings are dug out and sold as fill.

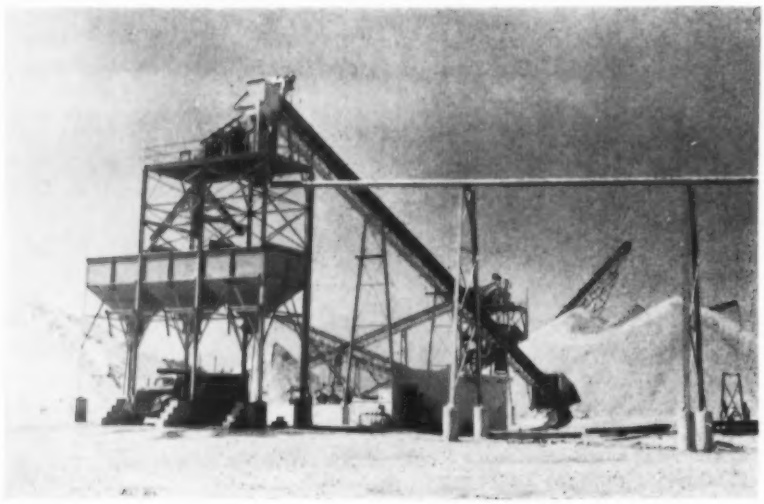
The operator in the control tower on top of the plant can see the entire operation. He controls everything from the surge feeder to the storage tunnel. A man at the primary crusher controls the feed of material into the surge hopper, and another at the loading station controls withdrawal of the material of the finished products from storage, as well as the loading. An Executone intercommunication system connects these three points and the plant office.

The original layout of the plant was made by C. S. Monroe of Monroe Brothers, Inc. E. Lee Heidenreich was consulting engineer in charge of general design. A. E. Finley and Associates of Miami did the detailed structural design, including conveyor belts, towers, etc. M. B. Garris, consulting engineer, Miami, designed the pit development procedure. Hewitt-Robins sup-

Material being dumped from the ramp to the hopper over the primary crusher. The small surge hopper (foreground) serves to even out the flow to the plant.



The sand scalping tank, which usually sends concrete and masons' sands to separate screw dewaterers. Note the small screen, which insures removal of all oversize from sand going to the mason screw.



These three 65-cu. yd. truck-loading bins are receiving material via the tunnel reclaiming conveyor from the three crushed stone stockpiles.

plied the conveyor belts, idlers, drives, etc. The cantilevered stockpiling conveyors and other stacking conveyors have internal wrap drives. The other conveyors are driven at the head pulley through Dodge reducers. Wagner motors and Clark starters and controllers are used throughout, and all wiring is underground. Hoyt wire screen cloth is used throughout.

This is the first plant of Rockdale Stone, Inc., a new company formed by experienced operators. The firm is a wholly-owned subsidiary of the Three Bays Improvement Company, which owns or controls a large acreage of land under development. Rockdale Concrete Company operates a ready-mixed concrete plant on the quarry property and another at 2800 SW 71 Ave., in the southwest part of Miami. The main office is at Coral Gables, Fla.

Officers of Rockdale Stone, Inc. are: W. J. Troup Jr., president; J. O. Murray, vice-president; F. G. Murphy, secretary and treasurer; and W. A. Crocroft, assistant secretary secretary and treasurer. The board of directors includes Messrs. Troup and Murphy, C. T. Stockton, S. K. Ferry Jr., W. E. Dunwody Jr., and Arthur Vining Davis, who is also the principal stockholder. C. S. Monroe is plant manager, M. C. Watkins is plant superintendent, and Bill Hawker is pit foreman.

1958 Construction Activity Shows Increase over 1957

New construction activity in September matched the all-time high of $4,800,000,000 set in August, according to preliminary estimates prepared jointly by the U. S. Departments of Commerce and Labor. The total dollar volume for the first 9 months of 1958, amounting to $36,400,000,000, was up slightly from the comparable 1957 period.

Public construction thus far in 1958 was stimulated by increased spending for highways and public housing programs (including armed services and low-rent housing), and amounted to $11,300,000,000 a rise of 6 percent from the first 9 months of 1957. The private construction total, at $25,100,000,000, was only slightly below the 1957 figure, as gains in housing and nonresidential almost offset the drop in industrial building.

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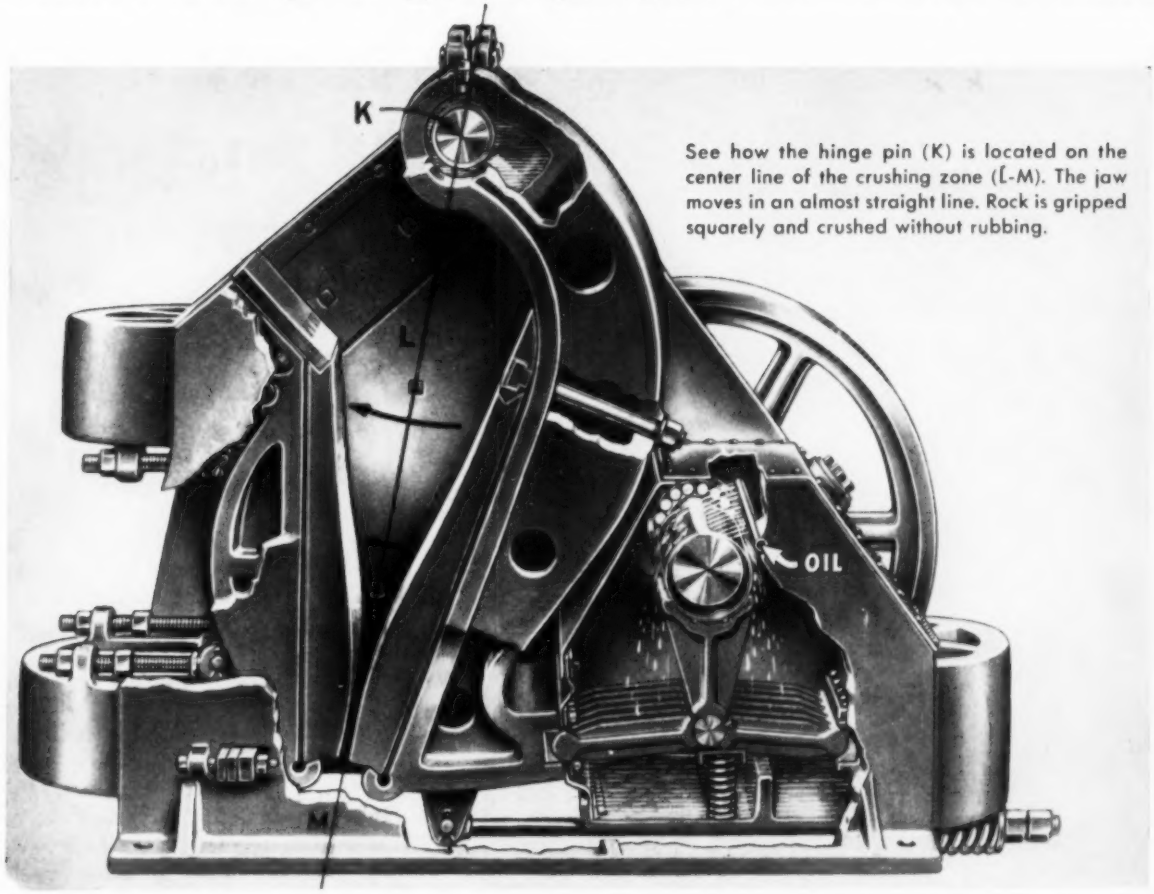

See how the hinge pin (K) is located on the center line of the crushing zone (L-M). The jaw moves in an almost straight line. Rock is gripped squarely and crushed without rubbing.

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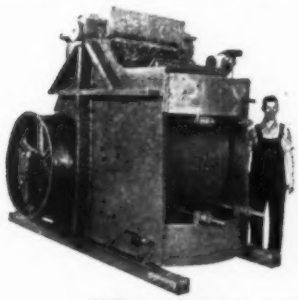

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Original lift was 2½″. Lift remaining at replacement measures a full 2″. Liner plates are worn to less than ¼″ in the valleys. There was no evidence of breakage in either plates or bars.

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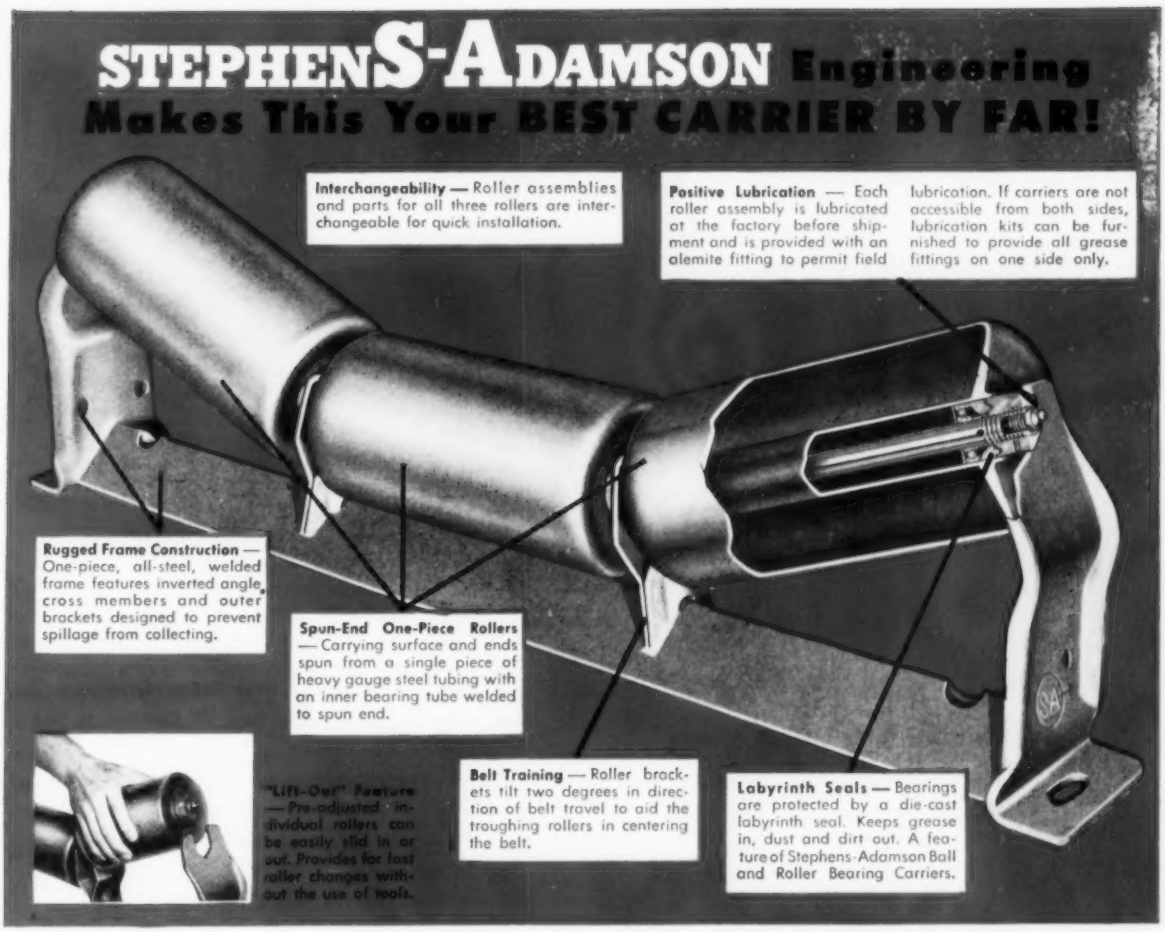
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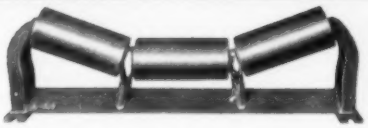

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WRITE FOR BULLETIN 355

GENERAL OFFICE AND MAIN PLANT:
20 RIDGEWAY AVE., AURORA, ILL.

PLANTS AT: CLARKSDALE, MISSISSIPPI • LOS ANGELES, CALIFORNIA • BELLEVILLE, ONTARIO

Chevrolet's new El Camino combines fresh beauty with a husky pickup box that's 76¼" long, 64¼" wide.

THE BEST YET OF THE BEST SELLERS...

CHEVROLET TASK·FORCE 59 TRUCKS

For '59, the brightest new ideas in trucks are Chevrolet's! There's the new El Camino to set a new standard in styling... new features and refinements in every model to set new records for saving!

Here is the soundest, savingest, sharpest looking line of haulers that ever hustled a load! For evidence, consider the dazzling new El Camino. It combines slimlined beauty with the ability to handle man-size hauling jobs!

Or take the pickups of Task-Force 59—a *dozen* big-bodied beauties that suit scores of jobs with five handsome Fleetside models and seven handy Stepside models!

A new edition of the famous Thriftmaster 6, standard in light-duty models, gives up to 10% greater fuel economy—up to 20% with new maximum economy option*. And in the medium- and heavy-duty classes, you'll find new V8 power . . . axles, transmissions, frames and brakes that are refined and improved to whip the toughest runs.

Whether your truck is a light-, medium-, or heavy-duty job, these are trucks you've got to see! They're on display right now at your Chevy dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

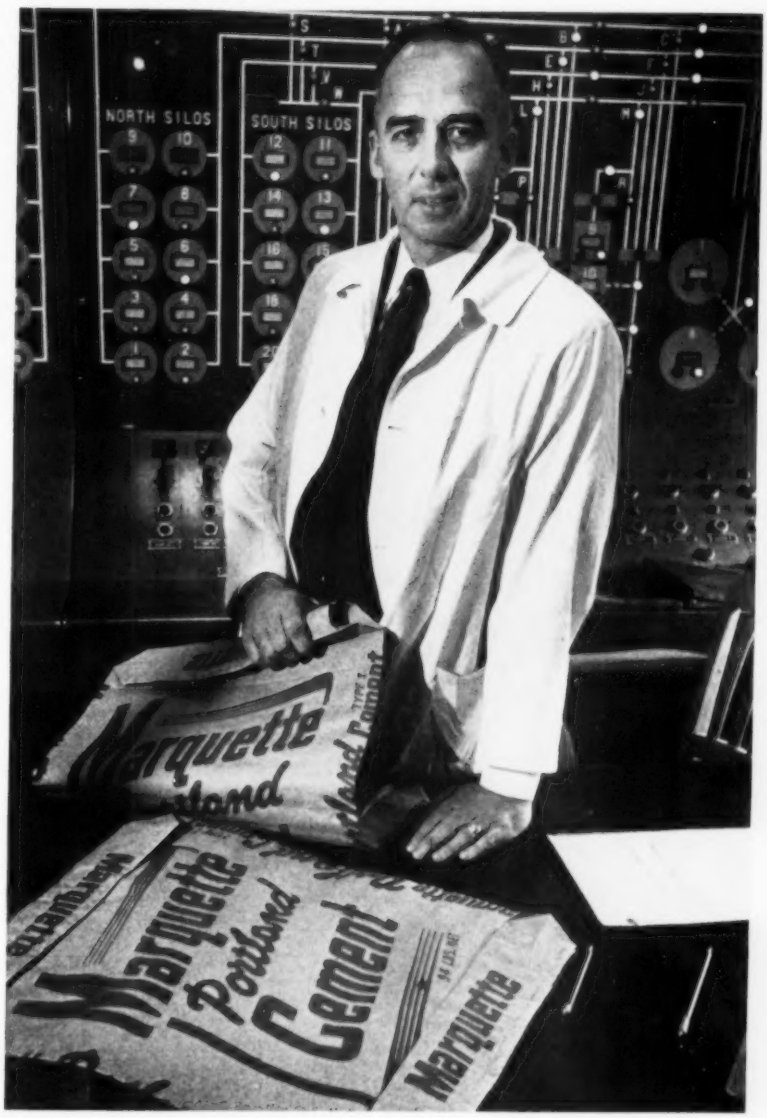
**Optional at extra cost.*

Short-stroke V8 economy combines with heavy-duty chassis for top hauling ability at low cost in this 1959 Series 80 Chevy Tandem model.

NEW MIGHT, NEW MODELS, NEW MONEY-SAVING POWER! CHEVROLET

"Bemis STEPPED-END Multiwalls perform a service for our customers . . . and so for us . . ."

SAYS E. E. STORMER, OF MARQUETTE CEMENT MFG. CO.



"The same benefits we encountered by using Bemis STEPPED-END Pasted Valve Multiwalls in our plant operation turned out to be benefits to our customers, too"... says Mr. Stormer, purchasing agent for Marquette Cement. "We like Bemis STEPPED-END Bags because they pack better and stay cleaner. Naturally, our customers are also in favor of cement bags that don't sift and get dusty. Cars stay cleaner and the bags are easier to handle."

Although Marquette officials now consider the use of these bags *primarily* as a service to customers, they still look upon them as a major improvement in their packing operation, as well. Bemis STEPPED-END bags pack better because of the Diamond O construction, stepped corners and the hand insert.

GOT ANY OF THESE PROBLEMS IN *YOUR* PLANT?

- Valve openings stuck closed . . . causing lower production and loss of bags
- Slowed production (up to 25%) due to certain types of valve inserts catching on packing spouts
- Spurting and puffing of cement at corner opposite valve during packing
- Dusty packages on account of leakage from ends and valve opening
- Bags sticking together in bale or pallet, slowing production
- Excessive breakage (more than 1 bag in 1,000 is excessive)

Got any of those problems?
Sure you have . . . maybe all of 'em.

YOU CAN ELIMINATE ALL 6 BY USING *BEMIS STEPPED-END MULTIWALLS.*

Ask your Bemis Man for the *complete* story. **Bemis**

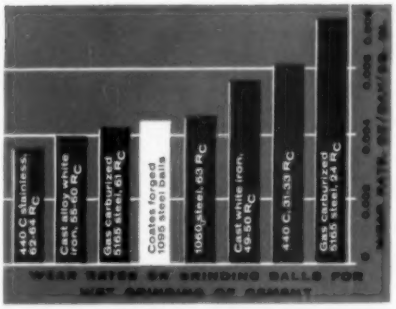
General Offices—408 Pine St., St. Louis 2, Mo. • Sales Offices in Principal Cities

NEW TESTING TECHNIQUES PROVE CARBEX BALLS YOUR BEST BUY

Coates Carbex Triple-Forged Grinding Balls proved their durability and performance in a recent production run test. Using a newly developed scientific method of invisibly marking balls for positive identification, technicians charged a finish grinding cement mill with Coates Carbex Balls as well as other types. Ninety-eight per cent of the test balls were recovered after thousands of hours . . . laboratory inspection demonstrated conclusively that Carbex Balls, costing only a few cents per pound, performed excellently, showed little wear, gave more service per cost dollar.

Coates has continuously sponsored research to develop better grinding balls. The low cost, high-performance Carbex Triple-Forged Grinding Ball made of fine-grained, high carbon steel is specially forged to attain more perfect sphericity . . . heat treated to extreme hardness . . . toughened to stand stresses. Dollar for dollar, on a true cost basis, Coates proved better than the best.

CS56 2


440 C stainless, 62-64 Rc
Cast alloy white iron, 58-60 Rc
Gas carburized 5165 steel, 61 Rc
Coates forged 1095 steel balls
1060 steel, 63 Rc
Cast white iron, 49-50 Rc
440 C, 31-33 Rc
Gas carburized 5165 steel, 24 Rc

COATES INVITES COMPARISON . . . Get the results of our studies of grinding-ball wear. Write Coates today for detailed research data. Make your own test . . . it can prove a profit opportunity for you.

Write for prices . . . All sizes ½" to 5" carried in stock for immediate shipment.

COATES STEEL PRODUCTS CO. CARBEX TRIPLE-FORGED BALLS

COATES STEEL PRODUCTS CO.

GREENVILLE, ILLINOIS

LARGEST EXCLUSIVE MANUFACTURER OF GRINDING MEDIA

More Information, Please

Use postcard to get this literature or details about equipment and products reported in this issue.

INTERNATIONAL HARVESTER'S complete line of new wheel tractors in six power sizes, ranging from 12 to 72.5 hp., are fully described in a catalog just released by the company. Special features and specifications for each tractor are given. **(301)**

TYPE A2 HYDRO-PRECIPITATOR SCRUBBER is detailed in a bulletin issued by *The Johnson-March Corporation*. Specifications are given for 18 Type A2 scrubber sizes ranging in capacity from 500 c.f.m. to 40,000 c.f.m. Design and construction features are explained. **(302)**

TRUCKS AND ENGINES manufactured by the *Reo Division, The White Motor Company*, are illustrated in a complete model folder, which indicates weight classifications, general applications, and major components available. It also presents Reo engines, including V-8 and six cylinder models, and describes rebuild kits for these engines. **(303)**

BRONCO CERTIFIED 66 PORTABLE CABLES for mining are covered in a condensed catalog issued by the *Western Insulated Wire Company*. Various types of cable are pictured and described. Cutaways illustrated construction features. **(304)**

TIRE RETREADING SERVICES offered by the *Southern Tire Company* are described in a booklet released by the firm. A wide range of sizes and tread designs are available through the use of modern three-sectional interchangeable-tread molds. **(305)**

LONGER LIFE FROM V-BELT DRIVES is the theme of a new manual issued by *B. F. Goodrich Industrial Products Company*. The manual tells how to select and install V-belts, how to detect V-belt trouble, diagnose belt failures, and correct drive troubles. Also included are tips for proper V-belt maintenance and a suggested inventory survey check list for V-belt drives. **(306)**

A SOUND-LEVEL RECORDER has been added to *Hardinge Company's* Electric Ear, an electronic device for regulating the feed rate to grinding mills, based upon the grinding sound from the mill. The new recorder makes it possible to keep a 24-hour record of grinding mill operations, and indicates variations that occur which may adversely affect efficient operation. Descriptive literature is available. **(307)**

MODERN CORE DRILLS AND THEIR USES is the title of a new publication from the *E. J. Longyear Company*. The booklet gives information on the uses of diamond core drills, the function of major parts, and illustrates the various types of drills and drilling rigs. Operation of the working parts of a high capacity drill is described. **(308)**

PNEUMATIC CONVEYING SYSTEMS are featured in a new bulletin issued by *The Day Company*. This bulletin covers high density and low density conveying systems and equipment. Common installation arrangements are diagrammed. Photos show actual installations, basic equipment, and accessories. **(309)**

THE LORAIN 107, a 7-8 ton truck-mounted crane, convertible to shovel, dragline, clamshell, and hoe, is described in a 12-page catalog produced by *The*

December ***PIT AND QUARRY*** **1958**

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

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Thew Shovel Company. Action photos and a description of features are included. **(310)**

CATENARY CONVEYOR IDLERS designed by *Hewitt-Robins* are described in new literature. The rubber double spiral idler design is molded around a steel rope. Heavy steel shafts are swaged to the ends of the rope and fitted with high capacity precision ball bearings, seals, and malleable bearing housings. The trunions provided on the bearing housing are simply placed into heavy pipe support frames. **(311)**

LUBRICATION NEWSLETTER No. 5, a technical paper covering the effect of lubricants on the "wear in" of new machinery, has been released by *The Alpha-Molykote Corporation.* A thorough engineering study of the surface geometry of mating surfaces is included. Results of tests on the lubrication of mating surfaces are given. Actual test records are pictured and analyzed. **(312)**

FLEXIBLE HOSE AND DUCTS for use in dust control are described in Bulletin 82, published by *The Flexaust Company.* Application of the hose in various industries is illustrated. Selection and accessory information is provided. **(313)**

A RIM CATALOG published by *The Goodyear Tire & Rubber Company* contains pictures, information, and engineering data on the firm's rims, wheels, tools, and rim accessories. Text includes information and pictures on rim research, step by step procedure for mounting and demounting rims, and operating instructions for using hydraulic tools. **(314)**

THE BUELL CYCLONE for the collection or recovery of industrial dusts is described in Bulletin C-103 published by the *Buell Engineering Company, Inc.* Standard arrangements and dimensions are shown in diagrams and tables. **(315)**

A NEW HYDRAULIC OUTRIGGER introduced by *The Maxi Corporation* is detailed in a booklet containing illustrations and features. Controlled from the crane cab, the floats can be set or retracted independently of each other or together in 32 seconds. **(316)**

HEAVY-DUTY LOW PRESSURE COMPRESSORS manufactured by the *Joy Manufacturing Company* are covered in a newly-released bulletin. Specifications on three models ranging from 756 to 7392 c.f.m. and a detailed sectional drawing are included. **(317)**

HYDRAULIC WEIGHING SYSTEMS are covered in Bulletin 582 prepared by *The A. H. Emery Company.* The catalog is sectionalized to provide ready access to both engineering and application data. Application examples show method of selecting proper equipment for particular jobs. Photographs and dimensioned cross-section drawings give details of equipment. **(318)**

TRACKWORK designed for mines and other industries which maintain in-plant rail trackage is described in a brochure issued by the *American Brake Shoe Company.* The booklet illustrates and lists specifications for turnouts, frogs, guard rails, switch stands, crossings, etc. **(319)**

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new addition to

HYDRA-DRIVES® LINE!

FULL-POWER SHIFT TRANSMISSIONS now available for equipment of from 60 to 175 h.p.

Rockwell-Standard's new model Hydra-Drives *Full* Power Shift Transmission is now available in sizes especially designed for smaller installations, such as front end loaders, fork trucks, scrapers, crane carriers, rubber tire tractors and military vehicles. A single compact package combining torque converter and 4-speed, *all power shift* transmission, the Type BDB Transmission puts power to work smoothly, efficiently and economically.

Only the Hydra-Drives BDB offers all these major advantages:

4 Speeds Forward and Reverse. All Power Shifted! Provides for maximum horse power to load under all load conditions.

Easier Servicing and Maintenance. Fewer moving parts and bearings. Simple, rugged countershaft design and spur gears simplify maintenance.

Full Disconnect provides for split drives and makes it easier and safer to tow.

Dual Reduced Speed Pump Drives can be driven at engine speed or 4/5 engine speed for longer pump life and increased horse power to load.

Integral Design. Torque converter, transmission, oil passages, valving and oil sump are in one compact housing. Package is less bulky... up to 7¾ inches shorter than comparable models. Provides easier installation and less maintenance.

HYDRA-DRIVES
ROCKWELL-STANDARD CORPORATION
TRANSMISSION AND AXLE DIVISION
DETROIT 32, MICHIGAN

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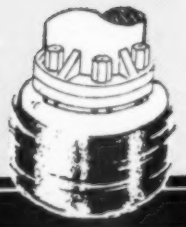
RAYMOND
HIGH SIDE ROLLER MILLS



TODAY'S ECONOMY UNITS FOR FINE GRINDING OPERATIONS

ROLLER MILL ECONOMY is an accepted term long associated with the Raymond line of finely engineered roller mill equipment, developed over seventy years ago, and known throughout the industry for its traditional record of service.

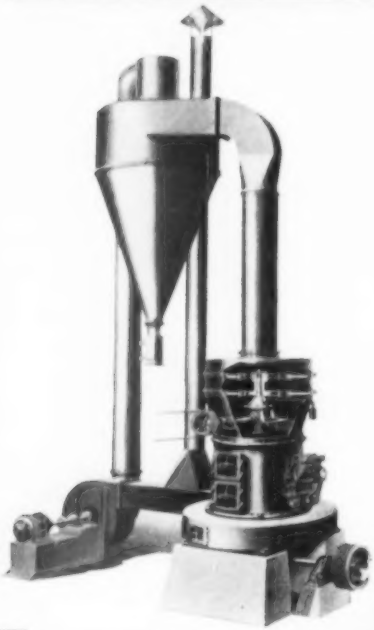
Raymond present-day designs incorporate many cost-saving features that culminate in time-proven efficiency for the production of uniform quality powdered materials.

(1) Pneumatic feed control maintains a maximum "load" on the mill and keeps it at full capacity during the entire run.

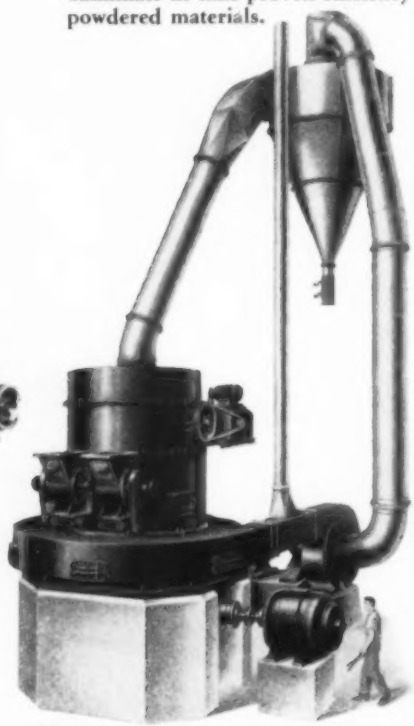
(2) Self-lubricating oil journals on the roll assemblies insure constant, automatic circulation of the oil, resulting in important economies in lubrication and maintenance.

(3) Large rugged bearings, heavy over-size shafts, finely balanced construction and grinding elements made with specially hardened wearing surfaces, all contribute to long service-life and low-cost performance.

Protect your profits with dependable equipment.



STANDARD ROLLER MILL with Whizzer Air Separation. Provides instant fineness control over a wide range by one simple adjustment, and maintains consistent uniformity of product.



SUPER ROLLER MILL for maximum economy in handling extra large capacities. Built in several sizes of five-roller and six-roller mills, capable of delivering from 15, 20 to 30 tons or more per hour.

ROLLER MILL equipped with Raymond Flash Drying System for simultaneously drying and grinding material containing small percentages of surface moisture. Important savings result through elimination of separate dryers and conveyors.

For general information of Raymond Roller Mills, see Catalog No. 79. For specific details of Super Roller Mills, write for Bulletin No. 72.

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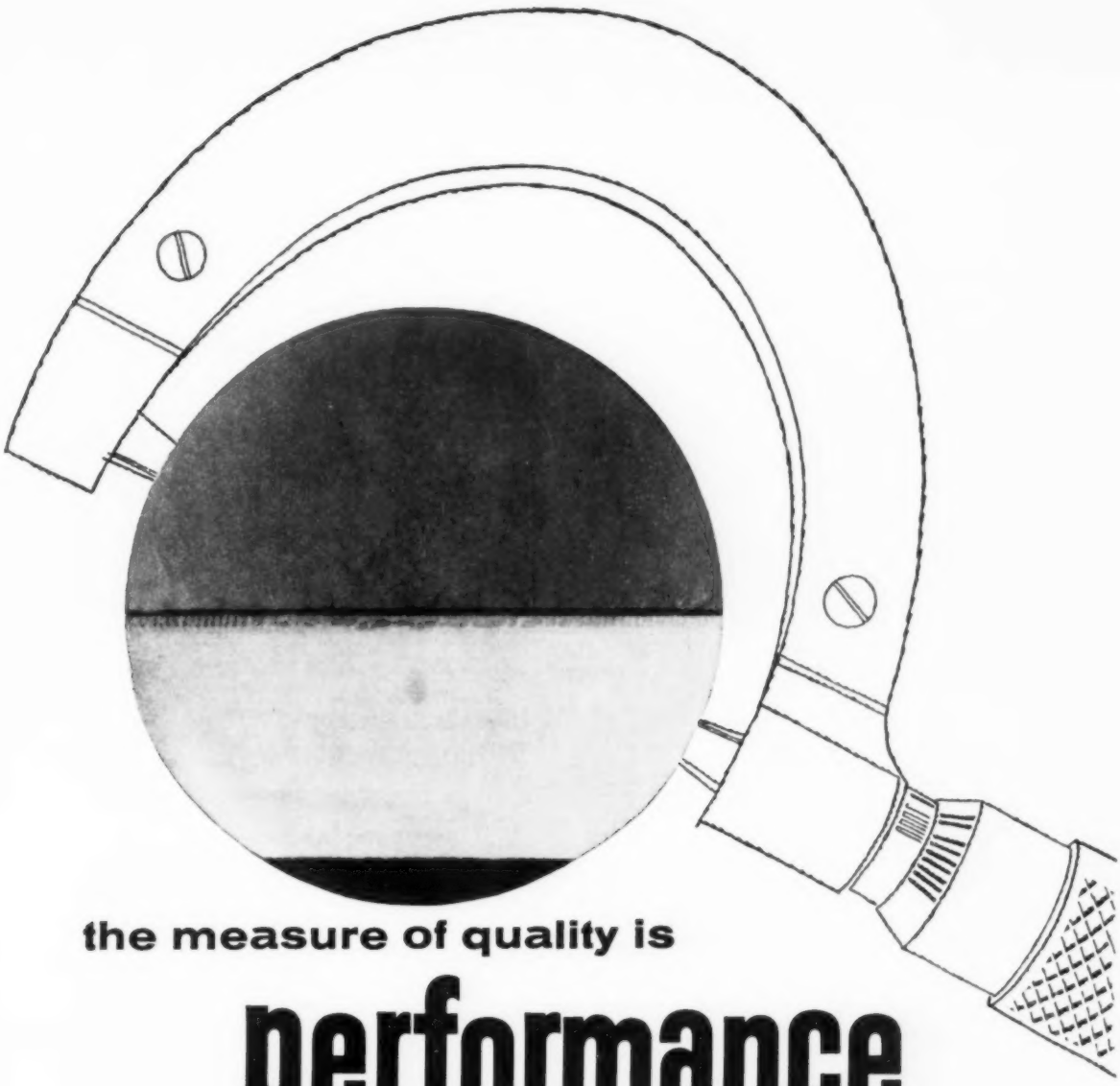

the measure of quality is

performance

Moly-Cop Grinding Balls perform superbly on toughest grinding jobs because they have the necessary hardness to stand up to the long economical grind. They wear evenly because of that hardness which is uniform right to the core. That's the result of technological control in alloying, forging and heat treating by Sheffield. And the reason why Moly-Cop Balls are THE STANDARD OF COMPARISON AROUND THE WORLD.

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Grinding Balls

SHEFFIELD DIVISION ARMCO STEEL CORPORATION SHEFFIELD PLANTS HOUSTON • KANSAS CITY • TULSA

EXPORT REPRESENTATIVES, THE ARMCO INTERNATIONAL CORPORATION, MIDDLETOWN, OHIO

Get the inside information on why Hamilton belts are best

When you see what goes into a Hamilton conveyor belt you can understand why hundreds of sand, gravel and quarry operators are hauling top-capacity loads for longer periods with virtually no loss of time or maintenance. Here's the inside information!

Cushion Cover. Heavy reinforced edges. Defies crashing impacts, cuts, gouging, abrasion.

Breaker Fabric. Optional double cord fabric acts as second cushion and increases cover adhesion.

Fabric Plies. Impregnated with rubber, adds strength.

Rubber Skim Coat. Provides a resilient bed between plies.

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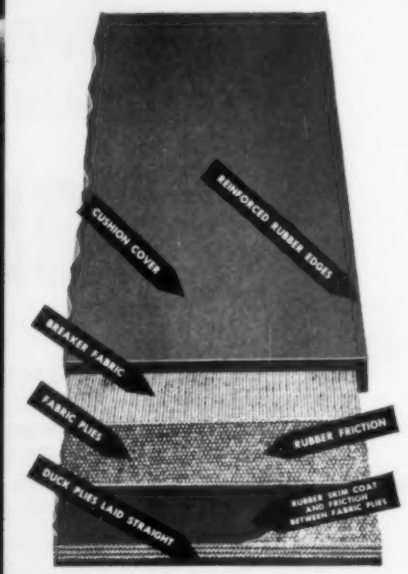

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Taylor Succeeds Frei as President Of Expanded Shale Clay & Slate Inst.

Newly elected officers of the Expanded Shale Clay and Slate Institute, chosen at the sixth annual meeting. Seated, left to right: Allan Taylor, president; Cedric Willson, first vice-president; standing: Ben Park, treasurer; L. A. Thorssen, second vice-president; and L. R. Kennedy, secretary.

The Expanded Shale Clay and Slate Institute held its sixth annual meeting at the Muehlebach Hotel in Kansas City, Mo., October 15 through 18. All but 7 of the 36 producing plants in the Institute sent representatives; this number included 4 Canadian plants. The Carter-Waters Corporation, Kansas City, and Buildex, Inc., Ottawa, Kans., served as co-hosts and arranged for members and guests to visit their plants, and also to enjoy a residential tour.

The major activity of the meeting was the discussion of research studies covering all phases of masonry and structural concrete, including prestressed concrete. Several new programs were proposed for the coming year.

Several new members were welcomed into the Institute. These include Acolite of Springfield, Minn.; Clayburn-Harbison, Ltd., Abbotsford, B. C., Canada; Material Service Corporation, Chicago; Norlite Products Company, Spokane, Wash.; Rescolite, Ft. Smith Ark.; and Winnipeg Light Aggregates Ltd., Winnipeg, Man., Canada. Two additional plants of present members were also entered on the membership list.

Guests attending the meeting included Ed Head, Clinchfield Coal Company, Dante, Va., and Milton Schultz, Empire Building Materials Company, Portland, Oreg., and also representatives from Featherock, Inc., Sorel, P.Q., Canada, and Expanded Shale Products, Inc., Denver, Colo.

Otto Frei, president of the organization for the last two years, turned over his gavel to Allen Taylor of Kenlite, Louisville, Ky. Other newly elected officers include Cedric Willson, first vice-president; L. A. Thorssen, second vice-president; and L. R. Kennedy, secretary.

Next year's meeting will be held in Toronto, Ont. Serving as official host will be the Cooksville Company, Ltd., Toronto. This firm's expanded shale operation is one of the oldest in the world.

Gypsum Production in 1957 Down 11 Percent from '56

Paralleling the trend of residential construction, the output of the gypsum industry declined in 1957, according to producers' reports to the U. S. Bureau of Mines.

Output of domestically mined crude gypsum reached a three-year low of 1,991,602 short tons in the first quarter of 1957—23 percent below that of the first quarter of 1956. During the second and third quarters, the production rate increased steadily, and in the third quarter it exceeded the volume of the corresponding period of the previous year. Output of crude gypsum for the year totaled 9,194,580 short tons, 11 percent below 1956.

Fifty-seven plants having 273 pieces of calcining equipment produced 7,800,000 tons of calcined gypsum from domestic and imported ore, 9 percent less than in the previous year.

Producers reported stocks of crude gypsum totaling 2,313,000 short tons on hand on December 31, 1957, compared to 2,265,000 tons on the same date of the previous year.

The average value of domestically mined crude gypsum was $3.25 per short ton ($3.31 in 1956); among the uncalcined uses, the unit values of portland-cement retarder and agricultural gypsum products were $4.21 and $3.76 per ton, respectively.

Imports of crude gypsum into the United States totaled 4,300,000 short tons, as in the previous year. Canada supplied 85 percent of the total quantity imported and approximately 27 percent of the total United States supply.

Cement Firms in Guatemala Build Plants, Expand Facilities

Cementos Cruz, S. A., a new cement company in Guatemala, incorporated in March, 1957, will be the second firm in that country to produce portland cement. The Cementos Cruz plant will be located about 50 miles from Guatemala City, near the Atlantic Coast Highway. It will have a capacity of about 500 tons a day.

A $2,500,000 expansion program at the Cementos Novella, S. A., plant was completed in December, 1957. Operating at full capacity, the plant produces 600 metric tons of cement a day, representing an increase of 325 metric tons over the former production rate.

Perlite Plant Costing $300,000 To Be Built in Havana, Cuba

Construction of a $300,000 perlite plant in Havana, Cuba, will begin early in January, according to an announcement released by the West Indies Perlite Manufacturing Company.

The plant, first of its type in Cuba, will work one 8-hour shift, 300 days a year. Production will include 300,000 bags of perlite and 5,000 tons of commercial products a year.

industry weighs problems, answers in 46th National

Seymour B. Fleming (left), safety director, New York Trap Rock Corporation, West Nyack, N. Y., retiring general chairman of the Cement, Quarry, and Mineral Aggregates section; and the newly-elected general chairman, Paul J. Worseck, manager, safety and welfare, Lehigh Portland Cement Company, Allentown, Pa.

ANOTHER ON THE SPOT REPORT

"YOU can't sit down beside a dying man and read a book on what to do." "An employee who disregards safety off the job does not by some mystic process evolve into a safe worker when he punches the time clock." These are examples of the thought-provoking comments made during the discussions in the Cement, Quarry, and Mineral Aggregates Section meetings of the recent 46th National Safety Congress.

Sessions were held from October 20 to 24, and headquarters were at the Conrad Hilton Hotel in Chicago, which also housed the exposition and about 200 exhibits of safety equipment, products, and ideas. Five other Chicago hotels provided space for those sessions of the approximately 200 scheduled that could not be accommodated in the headquarters hotel.

Following a joint luncheon with the coal mining and mining sections, the initial meeting of The Cement, Quarry and Mineral Aggregates group was opened with welcoming remarks by Seymour B. Fleming, general chairman, (safety director, New York Trap Rock Corporation).

As reported by Mr. Fleming, all section committees were active in the promotion of many desired safety programs during the year. A special group was established for the purpose of reviewing Bureau of Mines safety report forms, with respect to complexities, reliability, and interpretation of data reported, etc. As a consequence of that review, the committee met with the director of the Bureau of Mines and his staff, and presented certain recommendations for revision and improvement. The committee enjoyed excellent co-operation with the Bureau, Mr. Fleming emphasized, with the result that all recommendations were adopted. These will be incorporated in the new forms that go into effect in January, 1959. Particular appreciation was also expressed for the efforts of J. R. Boyd, executive director of the National Crushed Stone Association, in arranging meetings with the Bureau officials for the section's committee, and for the hospitality extended during the group's stay in Washington.

Following Mr. Fleming's remarks, Howard Riefenstahl (Alpha Portland Cement Co.), chairman of the nominating committee, presented the slate of officers for 1959. A unanimous ballot was cast for the following members: Paul Worseck (Lehigh Portland Cement Co.), general chairman; William A. Kipp (Universal Atlas Cement Co.), first vice-chairman; Fred Storch (The Whitehall Cement Manufacturing Co.), second vice-chairman; and Howard F. Johnston (Funkhouser Co.), secretary. The new program chairman is D. O. Seiple (Standard Slag Co.). Clinton H. Hoch is N.S.C. staff representative to the section.

First speaker of the opening session was Joseph A. Fernandez, personnel and safety supervisor, National Gypsum Co., St. Louis, who discussed *In-Plant Aid from Off-the-Job Safety*. Inculcating employees with "safety consciousness" is a project requiring constant attention, Mr. Fernandez pointed out. While off-the-job safety has been an unexplored area so far as industrial

Safety Congress

Three of the speakers for the sections meetings discussing the program. From left to right: Joseph A. Fernandez, personnel and safety supervisor, National Gypsum Company, St. Louis; A. B. Hoftiezer, safety director, Laverack & Haines, Inc., Buffalo; and Paul M. Hedley, vice-president operations, North American Cement Company, New York.

safety is concerned, it is worthy of thorough examination.

Since safety consciousness is not a characteristic that can be turned on and off, it follows that unsafe acts of employees off the job can well carry over into subconscious attitudes that will undermine safety on the job. Mr. Fernandez described a home safety program inaugurated in St. Louis by his firm in order to make employees' families safety conscious not only in the home environment but also to encourage husbands and fathers to observe safety practice in their employment. More than 90 percent of the workers' families are currently enrolled in the program; and, significantly, the youngsters in these families have been among the more powerful forces in recognizing and calling attention to unsafe acts off the job.

Impressive results have been established since the program was started three years ago. In that time, the on-the-job accident frequency rate has dropped about 33 percent, and the off the job rate has been reduced 60 percent. This improvement was achieved during a period in which the plant was being expanded remodeled by National Gypsum's own crew.

Problems and their Answers was the title of a slide-illustrated narration by A. B. Hoftiezer, safety director, Laverack & Haines. The presentation covered several fatal accidents, some non-fatal but crippling, and certain potential trouble spots in the average cement, quarry, or aggregates plant. The accidents described by the speaker, among the 19 problems pointed out, resulted in a total loss of nearly $250,000 to the various companies concerned.

As is only too often the case, the fatal accidents detailed could have been avoided by even nominal precautions. In one instance, a man was killed beneath a truck loading bin when a driver backing a truck into the drive area ran over him. The victim was not visible in the driver's rear view mirror, due to the backing angle. Had a full drivethrough been available, the driver would have seen anyone under the bins.

In another case, a truck driver was trapped under a lowered dipper and killed because he walked in front of a shovel from the shovel operator's blind side. Had the truck been spotted for loading on the *cab side* of the shovel, the operator would have had the driver in view.

At still another operation, a man was smothered by falling into a clay bin while apparently attempting to clear the bin discharge zone with a long-handled shovel. This happened despite the fact that sides of more than the required height above foot level had been placed around the bin, and a long bar had been placed at this point for the work for which the man used a shovel instead.

A non-fatal but crippling accident occurred when a crane operator lost his balance and fell into the unguarded hoist gear mechanism. The loss of his arm could have been avoided through proper guarding. The area of maintenance also came in for its share of criticism on existing and potential danger spots. It was noted that too frequently maintenance men place themselves in needlessly hazardous positions during routine duties. One example cited concerned a worker who was inside a truck-mounted concrete mixer on clean-up. He had failed to lock out the ignition, and had a few bad moments when the truck and mixer were started up before he

could make himself heard. The old bug-a-boo of failure to lock out conveyor drives was again brought to light. In one accident described, a man failed to lock out a drive prior to starting a replacement of V-belts, and the foreman threw the starting switch located near the tail pulley without noticing the man at the conveyor head pulley.

It was noted that employees themselves will often devise safety measures. At one plant a set of bars was welded tangentially to a roll on which concrete pipe reinforcing wire is formed into cylindrical cages. This device allows the wire mesh being formed into desired shape to complete a full circle without requiring the roll operator to reach over the roll to pull in the leading edge. Prior to installation of the bars, the latter operation had resulted in an injury when an operator had his hand caught in the roll.

No Time to Spare was the realistic heading given a presentation by Paul M. Hedley, vice-president operations, North American Cement Corporation. In conjunction with a movie illustrating the latest techniques of artificial respiration, as applied to victims of drowning ,electrical shock, and carbon monoxide gas, Mr. Hedley emphasized the urgency of knowing the right things *to do*, and *not* to do, for an accident victim.

This year, it was noted, the N.S.C. and the Portland Cement Association have tied their safety programs in with the Boy Scouts of America—a group whose well-known motto is "Be Prepared." The only way to be prepared in the case of an accident emergency is to know *beforehand* what should be done. As stated in the lead paragraph, "You can't sit down beside a dying man and read a book on what to do."

Referring to a booklet *Someone's Hurt* (copyrighted by Birk & Co., publishers, New York), Mr. Hedley cited three cardinal rules governing what *not* to do to an accident victim:

1. Unless it is *absolutely* necessary, *Don't Move an Injured Person.*

2. Don't let him get up.

3. *When in Doubt, Do Nothing* until an ambulance or a physician arrives.

The speaker also called attention to three conditions pointed out in the booklet as requiring immediate treatment: (1) when a person is bleeding freely, especially in spurts; (2) when he has stopped breathing; and (3) when he has taken poison.

In any of these situations death can occur in less than five minutes, and it is imperative that first aid be given immediately. Proper methods are presented in the booklet described, as well as in first aid texts available to everyone throughout the country.

As Mr. Hedley quite aptly put it, "Fate may call on you only once in your lifetime—it will be too late, then, to wish you had known."

W. Irwin Gill, president, Gill Blast Hole Drilling Co., drew upon considerable experience in drilling procedures to discuss *Safer Drilling through Preventive Maintenance.* Most of the points presented were illustrated with slides.

Mr. Gill noted that upon first entering the contract drilling business, it was impossible to furnish a customer with a certificate of workmen's compensation insurance without paying an unduly high rate. According to a carrier representative, this was due to drilling accident severity records. Being unable to reconcile personal experience with the position taken by insurance carriers, Mr. Gill undertook a survey into the background of that unfavorable situation.

Significantly, the study turned up such conditions as poorly maintained equipment, a conspicuous lack of experience on the part of management and supervisors in actual operation of drilling units, and, in fact, a lack of operating experience on the part of many designers of this equipment.

Lack of management experience in drilling, coupled with frequent isolation of drilling operations from overall production, was indicated as a possible explanation of the fact that drilling equipment is often more poorly maintained than other vital machinery.

Another factor is the pressure on drill manufacturers to develop units that are more productive, so that drilling costs can be lowered. This fact has led to delivery of some new machines that are not equipped with brakes. They depend on manual reversing of air or hydraulic motors for braking action. These motors, in turn, are provided with air through hoses subjected to abrasive and cutting abuse under field conditions, often in inaccessible areas.

High-pressure hoses leading to overhead rotary motors are often freely suspended from couplings and swivels instead of having safety chains and brackets provided for support. Control levers placed in such a position that one could be accidentally moved are also contributory to potential accidents.

While mechanical changes and improvements can offset many unsafe conditions, close co-operation between supervision and driller would be a major change for the better, Mr. Gill stated.

Several illustrated *Timely Tips for Safety Operation* were presented and described by Paul J. Worseck, manager safety and welfare, Lehigh Portland Cement Co., who is also the new general chairman of the section.

One of these tips showed the use of a screen on the lower section of a crane boom that stopped flying fragments from hitting the operator's cab when the unit was used for drop-balling. Another showed a jackhammer mounted adjacent to a bin bottom to reduce bridging of stone and eliminate the need to bar out the material.

In the area of electrical controls, a trip switch mounted beside a conveyor belt stopped the conveyor when the belt moves too far laterally. The use of waterproofed disconnect poles for elevated high voltage panels was also illustrated.

Favorable results were also ascribed to the use of a new machinery, equipment, and installation report form. On this form, attention of personnel involved is called to the condition of given units as follows: (a) O.K., (b) O.K. with changes recommended, and (c) not O.K. for operation until work has been done on certain items.

Not the least effective of the tips given is the display of safety posters with which employee attitudes can be shaped toward safer procedures.

John C. Machisak, chief, branch of accident analysis, U. S. Bureau

of Mines, is the first man from that agency to be on the section committee in several years. He reviewed pertinent points in the accident frequency records of the quarrying industries. Record low rates (overall) had been set for each of the five years preceding 1957. In the latter year, the frequency rate rose a little.

Much of the credit for this outstanding record is due to the low rate in cement rock quarrying, it was noted. The individual figure for the latter is lower than that of any other single quarrying activity, and it serves to bring the overall average down. Lime has also shown a good record, which is below the average of other quarrying. The following table excerpted from Bureau of Mines data shows the relative position of various types of stone.

Accident Frequency Rates (Fatal and Non-fatal) in 1957 (per Million Man-hours)

Cement Rock	4.04
Granite	45.09
Limestone	36.23
Limestone (main product lime)	23.28
Marble	27.90
Sandstone	51.61
Slate	59.37
Traprock	54.23

Operation—Attitude, described by R. S. B. Holmes, assistant director of safety, U. S. Steel Corp., Pittsburgh, is the basis of that firm's latest safety program. The first requisite to shaping employee attitudes toward safer practices is to give them more attention as individuals, the speaker said.

This is most readily done by having them participate in the development of safety measures and procedures. Employee interest is a natural corollary to their invited participation in discussions of job hazards.

Since 85 percent of industrial injuries are due to unsafe acts, while only 15 percent are attributable to unsafe conditions, the human relations factor becomes of paramount interest; it is probably the most effective means of approaching the problem. One of the most important steps, the speaker said, was that of establishing effective two-way communication on safety problems between foremen and workers. A basic point in U. S. Steel's program is the training of foremen as safety co-ordinators and conference leaders. With these men in close contact with the plant crews, an effective means is provided for drawing the individual worker into active participation in the program.

Port Official Bans Red Cement From Docking at Florida Port

Nelson DeBan, port authority chairman, Port Everglades, Fla., recently issued an order forbidding the unloading of cargo from Communist countries. The ban pronounced on July 14, was specifically directed against a cargo of cement from Poland, which was being transported aboard a Swedish-American Lines freighter. The vessel was diverted to a New England port. The cargo was imported by the International Trading Corporation of Port Everglades.

A State Department spokesman stated that if the blockade against shipments from Communist-ruled nations continues, the federal courts may be asked to rule on the matter.

Alvin Naiman Corporation of Cleveland, Ohio, has purchased Niagara Crushed Stone Limited of Port Colborne, Ohio. The new owners plan to expand present quarry facilities so that production capacity will be increased to approximately 2,000,000 tons a year. This is eight times the present production rate.

Fourth N.B.C.A. Convention Set for Feb. 2-6 at Miami

February 2-6, 1959, are the dates set for the fourth annual convention of the National Bituminous Concrete Association, which will be held at the Americana Hotel, Miami Beach, Fla. The executive committee of the Association made the announcement.

Also announced were a new regional vice-president for the Board of Directors, L. P. Gilvin, president of Gilvin-Terrill, Incorporated of Amarillo, Tex.; and the appointment of two new members to the Board of Governors, Mark Burggraf, vice-president of Burggraf Construction Company, Incorporated, of Idaho Falls, Idaho, and William R. Collins, vice-president and secretary of William Collins & Sons, Incorporated, of Fargo, N. D.

The ninth annual California statewide meeting of the Governor's Industrial Safety Conference has been scheduled for February 5 and 6, 1959, at the Biltmore Hotel, Los Angeles, Calif. A special session for the Mineral Extraction Section of the Governor's Conference is being planned.

A total of 560,000 metric tons of cement were produced in Lebanon in 1957, compared with 488,000 tons in 1956 and 420,000 tons in 1955.

● A new 13-cu. yd. Thew Moto-Loader works against a 35-ft. face in the West Lansing Sand & Gravel Company's pit in Lansing, Mich. It loads out up to 1,000 cu. yd. in an 8-hr. day into 10-cu. yd. trucks. Travel direction and speed control on the Moto-Loader are actuated by one foot, for a faster loading cycle.

when the 1958 income tax return is made,

Which Depreciation Method

by HAROLD J. ASHE

AT year-end, that practical problem will confront industry producers who have acquired new equipment, trucks, or other depreciable assets in 1958.

Answer? There is no simple, all-inclusive answer that can be given. Each owner or corporate executive will be obliged to make his decision on the basis of the circumstances surrounding his case. What may be wise for one taxpayer may be a bad decision for another taxpayer because of differing conditions.

There are three principal methods, any one or combination of which a taxpayer may elect for assets being depreciated for the first time; that is, one method may be used for one depreciable asset, another method for another asset. Once elected, however, the method chosen (with one exception, noted later) must be continued for the particular assets being depreciated. These methods are (1) straight-line, (2) double-declining balance, and (3) sum-of-the-years digits. Each will be briefly described, followed by specific examples showing the importance, tax-wise, of electing the correct method.

Straight-line—To use the straight-line method, the cost of an asset, less salvage value, is divided by the number of years of normal useful life. If the life is 10 years, one-tenth of cost is taken each year, the annual charge remaining constant.

Double-declining balance—With this method, the number of years of normal useful life is also used, but with depreciation the first year is twice the amount available by the straight-line deduction. Example: A certain asset cost $5,000, after taking salvage value into account. It has a 10-year life. Straight-line depreciation would result in $500 depreciation the first year. The double-declining balance method would be twice $500, or $1,000. The next year, the formula would apply to the *remaining unrecovered cost,* in this case $4,000, $800 would then be deducted for depreciation, and so forth through remaining years.

However, note this—*in the case of the double-declining depreciation method, a taxpayer may switch to straight-line depreciation at a later date*—this is the exception to the general rule about continuing the same depreciation method once elected; and it recognizes the fact that the double-declining balance method does not result in full recovery of cost by the end of the normal useful life. If and when a switch is made to the straight-line method, the *remaining unrecovered cost* must be divided equally by the number of remaining years. The logical switch-over is at that point when an annual depreciation deduction by the double-declining balance method amounts to less than the annual rate which would be then available on remaining unrecovered cost through the use of straight-line depreciation.

Sum-of-the-years digits—Like the double-declining balance method, this is a stepped-up depreciation formula by which a larger part of cost is recovered in the first years of the life of an asset. The years are added to get the denominator of the fraction to be used. Example: 8-year life. Add 8, 7, 6, 5, 4, 3, 2, and 1 for a denominator of 36. The first year's numerator is 8. Therefore, the first year's depreciation is 8/36th of cost, the second year's is 7/36th of cost, and so on. Complete recovery is made the eighth year.

In using either of these stepped-up methods, such assets must have been acquired *new*, and must have a useful life of 3 years or more. Assets not acquired new must be depreciated by the straight-line method.

In making a determination of which method or methods to use, a taxpayer should keep firmly in mind that straight-line depreciation will result in smaller initial depreciation charges, but that these will be *constant* throughout normal useful life. The stepped-up methods will result in larger charges the first years, smaller charges the last years.

Examples—Perhaps the problem of selecting the correct depreciation method for particular circumstances can best be illustrated by citing some hypothetical cases. These will cover most of the situations in which taxpayers, individual or corporate, are likely to find themselves.

Individual taxpayer A has had an extremely bad year, because of flood losses, family sicknesses, and other circumstances of a calamitous nature. Adjusted gross income is only $5,000 *before new depreciation charges*. Four exemptions, excessively heavy medical expenses, plus other personal deductions eliminate any income tax. He had an excellent year in 1957 and was able to use some of these earnings early in 1958 for new equipment. He expects 1959 will be a good year. What

Should You Use?

should he do depreciation-wise? The less depreciation he takes in 1958 the better. His income tax for the year being nil, no additional depreciation charges are needed. He should elect the straight-line method on 1958 acquisitions because this will result in a larger part of depreciation charges remaining for *future* years.

Individual taxpayer B has net earnings of $15,000. He acquired new depreciable assets in 1958 at a cost of $3,000, having a 10-year life. With modern equipment, an efficient crew, the future is bright. He is in a position to continue to expand, add new equipment every year. He plans to do so. He uses the double-declining balance method because in the first year this gives him $600 depreciation, compared with $300 by the straight-line method. In the 30 percent tax bracket, the added tax saving can be used to help finance new equipment in 1959.

Taxpayer B figures that by the time smaller depreciation charges are felt on assets acquired in 1958, these can be offset by later acquisitions, also depreciated by the double-declining balance method. So long as this modernization and expansion process can be continued, these is an overall income tax saving.

Taxpayer C is just starting in business, having acquired a run-down business and considerable ill will at the year-end 1957. He realizes belatedly that it is going to be a long haul to build up the business. He cleared only $5,000 before depreciation. Assets acquired through purchase of the business are being depreciated at a rate of $600 a year, reducing income to $4,400. New assets acquired after purchase of the business cost $3,500. With a 10-year life, first year depreciation is $350 by the straight-line method, $700 by double-declining balance. The latter, plus a standard deduction, six exemptions ($4,400, less $700 depreciation, less $370, less $3,600) more than wipes out his income tax. Chances for earnings to rise in 1959 are about 50-50 with a decline. He figures he had better conserve as much depreciation as possible for future use—therefore, he chooses straight-line depreciation, and pays a small income tax.

Taxpayer D is incorporated. He has been making close to $25,000 a year, subject to 30 percent corporation tax. New equipment bought in 1958 is now beginning to pay off, and prospects are that in 1959 he will go well over the $25,000 figure. Earnings above $25,000 are subject to 52 percent tax. He elects straight-line depreciation for a substantial overall tax saving during the life of assets so depreciated. He realizes a saving because a larger part of total depreciation charges are available for years of higher earnings and higher corporate tax rate.

Taxpayer E has put up his business for sale, and expects to sell it in 1959 for a gain. In 1958 he acquired new depreciable assets. Should he have used an accelerated or straight-line method? By all means he should use a stepped-up method if his earnings exceed his deductions and exemptions by at least the amount of the accelerated 1958 depreciation charges. This will reduce his 1958 income subject to income tax. When he makes the sale of the business, the larger depreciation charge must be taken into account in determining the gain on the sale. However, the gain will be taxed at comparatively low long-term capital gain rates for an overall tax saving.

No producer can scan the economic horizon, study a crystal ball, and determine what his profit picture will be a year hence. Nevertheless, in determining which depreciation method to use, he should not only consider his present circumstances, but also try to foresee probable future conditions.

A taxpayer may cling to straight-line depreciation if there appears to be no foreseeable advantage in using an accelerated method of recovery. However, he should not hesitate to seize on a stepped-up method if this gives him an immediate and possible future income tax advantage.

If the question seems like a standoff, it may be best to take accelerated depreciation. This will provide a substantial tax saving for several years and provide additional business funds for future needed expansion or other business purposes.

MAX A. KOFFMAN, senior vice-president and director of Southwestern Portland Cement Company, has retired after 51 years of service with the firm.

Mr. Koffman joined the company in 1907, as timekeeper at El Paso, Tex., and advanced through the years to the post he held at the time of his retirement.

Winning Sand-Gravel Plants Cited In Bureau of Mines Safety Contest

THE Bureau of Mines, United States Department of the Interior, has presented Certificates of Achievement in Safety to 74 of the 208 plants that participated in its Sand and Gravel Safety Competition. These winners of awards operated 20,000 man-hours or more in 1957 without a lost-time or disabling injury.

Sand and gravel plants competing in the safety contest were enrolled in one of two groups: (1) bank or pit and (2) dredge. Of the total enrollment, 162 were bank or pit operations and 46 were dredge plants. In addition to the Certificates of Achievement in Safety that were awarded to the injury-free plants, a Certificate of Accomplishment in Safety was presented to each employee and official who worked at the winning plant for his contribution to the safety record of the plant.

The top award at bank or pit operations in 1957 was won by the Lockport plant, Material Service Corporation, Lockport, Will County, Ill., for operating 193,576 man-hours without a lost-time or disabling injury. This is the third consecutive year that Lockport has taken top honors in its group. The Lockport plant was first enrolled in 1954, and in 4 years of participation it has taken top honors in 1955, 1956, and 1957. During the 4 years, this plant has operated 757,855 man-hours with 1 temporary injury. The injury, with 6 days of lost time, resulted in frequency and severity rates of 1.320 and 7.917, respectively, for the 4-year period.

As a group, the 162 bank or pit operations worked an aggregate of 8,525,713 man-hours in 1957 with 170 injuries—3 fatalities, 13 permanent partial injuries, and 154 temporary injuries. The number of days lost because of injuries was 33,127.The frequency rate for these injuries was 19.940 per 1,000,000 man-hours of exposure, and the severity rate was 3,885.540 days lost per 1,000,000 man-hours. The frequency rate of 19.940 in 1957 was the lowest in the 8-year history of the competition, however, the severity rate rose over that in 1956 owing to the increase in fatal and permanent partial injuries. It is noteworthy that 80 plants, or almost 50 percent of the participants in this group, operated the entire year without a lost-time or disabling injury.

The Romayor plant of Texas Construction Material Company, at Romayor, Liberty County, Tex., attained the highest safety honors in dredge sand and gravel plants. A Certificate of Achievement in Safety was awarded the plant by the Bureau of Mines for an out-standing record of 198,880 injury-free man-hours. The Romayor plant has participated in the competition since 1950, when the contest was first begun, and since that time the plant has operated 1,224,070 man-hours with 15 disabling injuries, resulting in a frequency rate of 12.254 injuries per 1,000,000 fan-hours of exposure and a severity rate of 5,-172.090 days per 1,000,000 man-hours. This is the first year in which the plant has taken top honors, but it was awarded honorable mention in 1954 for operating 154,550 man-hours without a lost-time injury.

The 46 participating plants in the dredge group worked 2,867,618 man-hours in 1957 and reported 57 injuries, including 1 fatality, 5 permanent partial injuries, and 51 temporary injuries, resulting in a total time loss of 11,205 days. The overall fatal and nonfatal injury experience of the group resulted in a frequency rate of 19.877 and a severity rate of 3,907.424 per 1,000,000 man-hours of exposure. Both rates were below the corresponding rates of 20.646 and 7,528.407 in 1956. The average of 14 days lost for each temporary injury was the lowest for either group in any year in the history of the contest.

INJURY-FREE PLANTS

In all, 105 sand and gravel operations, or 50 percent of the number of plants participating in the 1957 competition, were operated 4,515,850 injury-free man-hours. This exposure to hazard was 40 percent of the combined worktime of all enrolled plants. Of these 105 injury-free operations, 80 (76 percent) were banks or pits and 25 (24 percent) were dredges. Included in this group with perfect safety records were 31 plants that worked less than 20,000 man-hours. The rules of the competition require a minimum of 20,000 man-hours for an award. These 31 plants merit special commendation for participating in the contest. Some plants enroll year after year, with full knowledge of their ineligibility for an award. Their injury-free records have aided the sand and gravel industry in its accident-prevention program to keep the number of injuries at a minimum.

The plants, excluding the two winners, that worked 20,000 or more man-hours without a lost-time or disabling injury, and who were awarded Certificates of Achievement in Safety were, as follows:

Hoot dry-wet-pit plant, Gifford-Hill & Co., Inc., Texarkana, Ark., 155,907 man-hours.

Alleyton No. 23 wet-pit plant, Texas Construction Material Co., Alleyton, Tex., 144,700 man-hours.

Eliot No. 104 wet-pit plant, Pacific Cement & Aggregates, Inc., Pleasanton, Calif., 139,024 man-hours.

Fair Oaks No. 111 dry-wet pit plant, Pacific Cement & Aggregates, Inc., Fair Oaks, Calif., 132,373 man-hours.

Wilson dredge plant, Gifford-Hill & Co., Inc., Turkey Creek, La., 128,076 man-hours.

Lafayette dry-pit plant, Western Indiana Gravel Co., Lafayette, Ind., 125,417 man-hours.

Flint Sand & Gravel dredge plant, Jahncke Service, Inc., (Flint Sand & Gravel Co.), Bluff Creek, La., 123,484 man-hours.

Morris dredge plant, Material Service

Corp., Morris, Ill., 109,577 man-hours.

Crystal Lake No. 398 dry-bank plant, Consumers Co., Crystal Lake, Ill., 107,957 man-hours.

Sun Valley dry-pit plant, Consolidated Rock Products Co., Sun Valley, Calif., 103,150 man-hours.

Grandview wet-pit plant, American Aggregates Corp., Columbus, Ohio, 96,753 man-hours.

Centerville No. 106 wet-pit plant, Pacific Cement & Aggregates, Inc., Centerville, Calif., 93,141 man-hours.

Boonville No. 1 dry-bank plant, Eastern Rock Products, Inc., Boonville, N. Y., 91,810 man-hours.

Burt dry-wet pit plant, Central Texas Gravel Co., Waco, Tex., 87,227 man-hours.

Irwindale dry-pit plant, Consolidated Rock Products, Irwindale, Calif., 83,255 man-hours.

South Beloit dredge plant, Consumers Co., South Beloit, Ill., 78,879 man-hours.

Sun Valley dry-bank-pit plant, California Materials Co., Sun Valley, Calif., 77,856 man-hours.

Swannanoa wet-pit plant, Grove Stone & Sand Branch of B. V. Hedrick Gravel & Sand Co., Swannanoa, N. C., 76,665 man-hours.

Herndon Rock Products Nos. 1 and 2 dry-wet pit plant, Stewart & Nuss, Inc., Herndon, Calif., 73,587 man-hours.

West Des Moines dredge plant, Concrete Materials Co., West Des Moines, Iowa, 66,753 man-hours.

Fenton dredge plant, Winter Brothers Material Co., Inc., Fenton, Mo., 56,144 man-hours.

Circleville dry-pit plant, The Sturm & Dillard Co., Circleville, Ohio, 55,964 man-hours.

Clayton dry-bank plant, Concrete Materials Co., Clayton, Iowa, 52,457 man-hours.

Albuquerque dry-bank plant, Albuquerque Gravel Products Co., Albuquerque, N. M., 50,063 man-hours.

Hawarden wet-pit plant, L. G. Everist, Inc., Hawarden, Iowa, 48,959 man-hours.

Pete dry-pit plant, Grand Prairie Construction Co., Lone Star, Tex., 47,895 man-hours.

South Bend wet-pit plant, Western Indiana Gravel Co., South Bend, Ind., 46,816 man-hours.

Arvilla wet-pit plant, Bradshaw Gravel Supply Co., Arvilla, N. D., 46,224 man-hours.

Lacon No. 390 dredge plant, Consumers Co., Lacon, Ill., 44,988 man-hours.

Cayuga dry-bank plant, Material Service Corp., Cayuga, Ind., 42,382 man-hours.

Clayton No. 135 dry-bank plant, Pacific Cement & Aggregates, Inc., Clayton, Calif., 41,553 man-hours.

Claremont dry-pit plant, Consolidated Rock Products Co., Claremont, Calif., 39,920 man-hours.

Dayton-South wet-pit plant, American Aggregates Corp., Dayton, Ohio, 39,601 man-hours.

Corrigan wet-pit plant, Texas Construction Material Co., Corrigan, Tex., 37,030 man-hours.

Montezuma dry-pit plant, Western Indiana Gravel Co., Montezuma, Ind., 35,685 man-hours.

Ramsey dry-bank lake plant, McKee Brothers, Inc., Ramsey, N. J., 35,640 man-hours.

Azusa dry-pit plant, Consolidated Rock Products Co., Azusa, Calif., 35,509 man-hours.

Memphis dredge plant, Marquette Cement Mfg. Co., Memphis, Tenn., 35,236 man-hours.

Leesburg dredge plant, Western Indiana Gravel Co., Leesburg, Ind., 34,915 man-hours.

Franklinville "F" dry-bank plant, Buffalo Slag Co., Inc., Franklinville, N. Y., 34,296 man-hours.

Seguine-Bogert dredge plant, Houdaille Construction Materials, Inc., Kenvil, N. J., 33,176 man-hours.

Rockfield No. 124 wet-pit plant, Pacific Cement & Aggregates, Inc., Friant, Calif., 32,803 man-hours.

Lacona dry-pit plant, The General Crushed Stone Co., Lacona, N. Y., 32,588 man-hours.

Barneveld No. 2 dry-pit plant, Eastern Rock Products, Inc., Barneveld, N. Y., 31,107 man-hours.

Luigi Vallone dry-bank plant, Luigi Vallone, Inc., Warwick, R. I., 30,800 man-hours.

Zanesville dry-pit plant, The Zanesville Gravel Co., Zanesville, Ohio, 30,212 man-hours.

H. B. Zachry Company dry-pit plant, H. B. Zachry Co., San Antonio, Tex., 30,206 man-hours.

Hovencamp dry-bank wet-pit plant, Ft. Worth Sand & Gravel Co., Haltom City, Tex., 29,996 man-hours.

Airways dry-pit plant, Memphis Stone & Gravel Co., Hernando, Miss., 28,636 man-hours.

Correctionville dry-pit plant, Concrete Materials Co., Correctionville, Iowa, 26,540 man-hours.

Highspire wet-pit plant, Highspire Sand & Gravel Co., Highspire, Pa., 28,302 man-hours.

Lakewood dry-pit plant, Houdaille Construction Materials, Inc., Lakewood, N. J., 28,279 man-hours.

Hartland dry-bank plant, Hartland Sand & Gravel Co., Hartland, Wis., 27,040 man-hours.

Eddyville dredge plant, Concrete Materials Co., Eddyville, Iowa, 25,872 man-hours.

Allenwood dry-pit plant, Hause Gravel Co., Allenwood, N. J., 25,064 man-hours.

Hewitt dry-pit plant, Consolidated Rock Products Co., North Hollywood, Calif., 24,695 man-hours.

Hawarden dry-wet pit plant, Hawarden Gravel Co., Hawarden, Iowa, 24,529 man-hours.

Warren dredge plant, General Concrete Products Corp., Warren, Pa., 24,516 man-hours.

Milton Grove dry-bank plant, Milton Grove Sand, Inc., Milton Grove, Pa., 23,477 man-hours.

Yorba Linda dry-pit plant, Consolidated Rock Products Co., Yorba Linda, Calif., 22,398 man-hours.

Manitowoc dry-bank plant, Manitowoc Supply Co., Manitowoc, Wis., 22,320 man-hours.

Olympia No. 125 dry-bank plant, Pacific Cement & Aggregates, Inc., Felton, Calif., 22,044 man-hours.

Muncie dredge plant, Peck-Woolf Sand & Material Co., Muncie, Kans., 21,904 man-hours.

Bismarck dry-bank-pit plant, Dakota Sand & Gravel Co., Bismarck, N. D., 21,600 man-hours.

San Bernardino dry-pit plant, San Bernardino Rock & Gravel Co., San Bernardino, Calif., 21,274 man-hours.

Oceana wet-pit plant, R. H. Baillio Co., Oceana, Va., 21,205 man-hours.

Escanaba dry-bank-pit plant, Bichler Brothers, Escanaba, Mich., 21,126 man-hours.

Sierra dry-pit plant, Consolidated Rock Products Co., Monrovia, Calif., 21,014 man-hours.

Coxey dry-bank plant, Industrial Silica Corp., Dundee, Ohio, 20,696 man-hours.

Anderson dry-pit plant, Western Indiana Gravel Co., Anderson, Ind., 20,563 man-hours.

Beacon Falls dry-bank plant, Grasso Construction Co., Beacon Falls, Conn., 20,373 man-hours.

Knight dry-bank plant, The Rubber City Sand & Gravel Co., Knight, Ohio, 20,187 man-hours.

The aggregate injury experience of the 208 plants competing in the 1957 National Sand and Gravel Safety Competition revealed that the 1957 injury frequency rate of 19.924 was the lowest in the 8-year history of the contest. This injury frequency rate was 4 percent below the rate of 20.732 for 1956 and 12.8 percent lower than the average of 22.841 for the 8-year period.

The injury-severity rate of 3,891.048 for 1957 was 2 percent higher than the corresponding rate of 3,815.499 for 1956 and 32 percent higher than the average rate of 2,952.427 for the 8 years of the competition. These 208 plants worked almost 11,500,000 man-hours with only 227 lost-time injuries. These 227 injuries included 4 fatalities, 18 permanent partial and 205 temporary injuries.

This safety competition is sponsored and conducted annually by the Bureau of Mines and is open to any bank, pit, or dredge plant operating an unconsolidated sand and/or gravel deposit.

Enrollment applications, rules, and information on this competition are available, on request, from the Branch of Accident Analysis, Division of Safety, Bureau of Mines, United States Department of the Interior, Washington 25, D. C.

$CaCl_2$ $CaCl_2$ $CaCl_2$

This operator is checking filtrate hardness. The result of this test determines the amount of calcium chloride to be added to the slurry.

calcium chloride in portland cement manufacture

By E. CARL KREAGER
Production Superintendent
and
EUGENE W. GEARY
Technical Director
Columbia Cement Division
Columbia-Southern Chemical Corp.

BECAUSE of wide publicity given to calcium chloride, most people are familiar with its use in the making of concrete and concrete products. No accelerator has been so thoroughly checked and used in this field as calcium chloride. The literature on the subject is voluminous and readily available from organizations such as the Concrete Institute, and others.

The addition of calcium chloride to raw mixes in the manufacture of portland cement to achieve alkali reduction is presently receiving considerable attention. The reason for this interest in lower alkali content in finished cement appears to be the result of the study of concrete failure caused by alkali-aggregate reaction where alkali reactive aggregates are used. Although the need has not arisen as yet in our plant, the possibility of the removal of alkalis through kiln operation has been considered.

A number of significant factors seem to be involved for successful removal by this means. Alkalis are readily volatilized in the form of chlorides. The removal is more easily accomplished in shorter kilns with higher back end temperatures. Also, oil or gas flames seem to present less difficulty than coal flames, where sulphur may be involved. Potassium is volatilized more readily than sodium. Longer burning zones also seem to promote volatilization. Removal of the very fine flue dust also facilitates alkali removal because it lowers the circulating load of alkalis when flue dust is returned to the kiln.

After studying these observations and experiences of others, we have concluded that the amount of calcium chloride required will vary depending upon the amount and kind of alkalis present, kiln length, burning temperatures, and burning zone length, as well as upon dust return and the character of fuel used. Sulphur in the fuel or in the raw mix probably has an inhibiting effect on volatilization. Additions of calcium chloride up to the chemical equivalent of the potash should be used for volatilization of potash. Soda usually requires larger amounts to secure significant results. The amounts required, as a general rule, can be determined only by plant trial.

The use of calcium chloride as a flux in the burning process has received rather extensive experimentation in the past. Most of these experiments were discarded due to adverse reaction with the kiln linings. With the development of some of our modern refractories, however, a re-examination of this subject might well be made.

The authors of this paper have had considerable success with the use of calcium chloride in increasing the production of kiln feed slurry filter wheels when other agents failed. A patent in this area has been secured, and it has been assigned to the Pittsburgh Plate Glass Company. It was as a result of this work that we were requested to write this paper, since the application may be of interest and may lead to further experimentation toward better control of wet-process slurry properties.

An investigation resulting in the

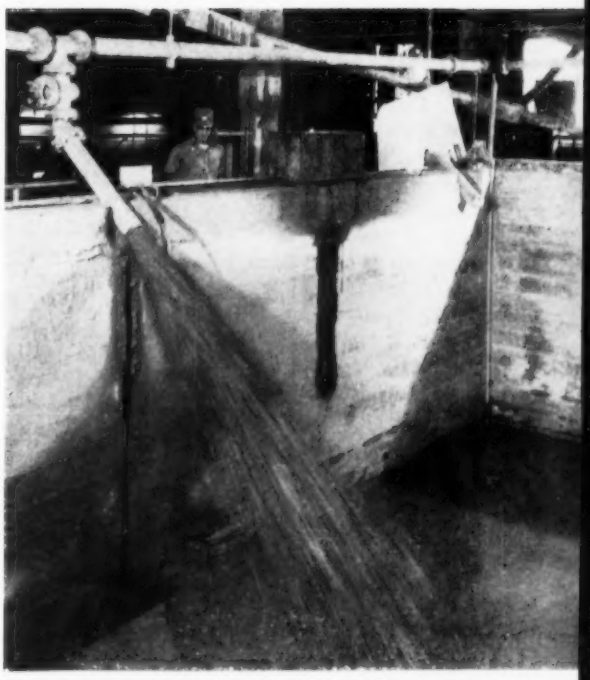
use of calcium chloride in filtration was started when the production of the filter wheels at our plant suddenly dropped to about one-half of normal output. The cake from the wheels was high in moisture and very gummy. A check of the mechanical operation of the wheels indicated no mechanical defects. The plant had just abandoned the open-pit quarries for limestone mine operation. The percentage of clay in the mix was found not to be in excess of that previously used.

Filter wheel capacity had always been inadequate unless the material was flocculated. Previously, this flocculation had been secured by heating the slurry by adding hydrated lime, but now this application failed completely. Since the limestone and shale, or clay, used were the same, it was decided that the trouble was caused by adventitious salts present in the mine stone which had not appeared in the quarry stone. Various flocculating agents were tried in the laboratory without success until calcium chloride was tried. When the calcium chloride treatment was used in the plant, the filtration rate immediately returned to normal. Some of the adventitious salts found in the mine were soluable iron and aluminum, sulphates and sulphides.

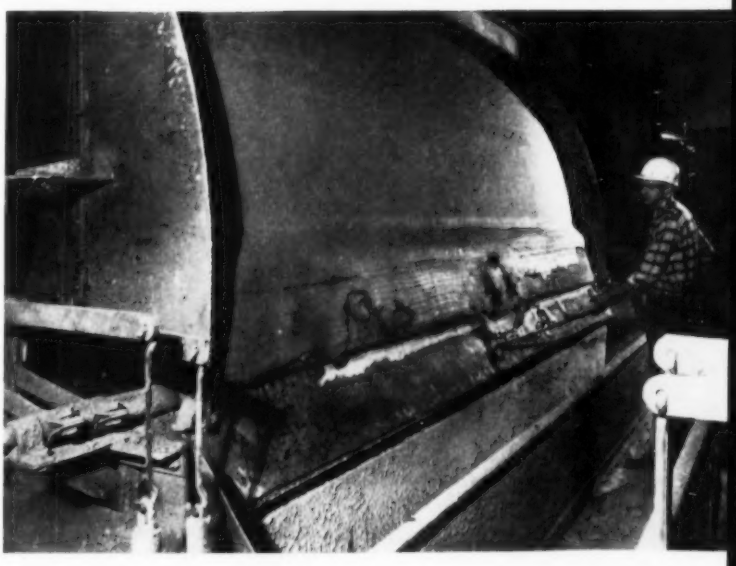
Considerable study was given to the phenomenon until a plausible theory was developed. For filtration of fine particles, especially of flat clay particles, dispersion is not conducive to high filtration rates. During the filtration of dispersed slurry the particles form a blanket of closely piled layers like a deck of cards, which makes it difficult to extract the water from the upper layers.

Flocculation of the slurry, on the other hand, results in random pil-

Right: Calcium chloride in solution is added to the slurry at the correcting basin.



Below: Approximately 17 percent of water is removed from slurry by the filter wheel.



Struck and Heaped Capacity Of Carrying-Type Scrapers

By JOHN G. McGUIRE
Field Engineer
LeTourneau-Westinghouse Co.

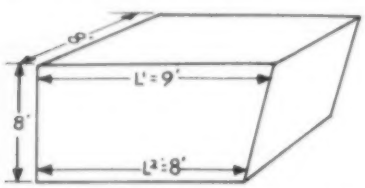
WHAT is struck and heaped capacity? How are they arrived at? What is the relationship between capacity and pay yards?

These questions often arise in comparative performances of various makes and models of scrapers.

Pay yards can be determined only by weighing the loads or comparing cross sections to load count. Rated capacity in heap and struck, however, are calculated volumes.

A standard method for determining the struck and heaped capacities of scrapers is outlined in the Society of Automotive Engineers *Handbook* under "Yardage Ratings," and is used by Le Tourneau- Westinghouse for rating all models. The handbook states:

"STRUCK capacity of a scraper shall be determined by the product of the area of one side plate contacted by the load multiplied by the width between side plates. (Most scrapers have straight parallel side plates and flat bottoms, and allowance shall be made for appreciable departure from such construction.) The struck capacity shall be given to the nearest 0.1 cu. yd."

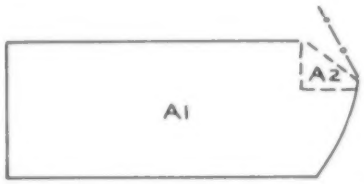


Area of side plate = ½ (L_1 + L_2) x height.
Volume = area of side plate x width.

Using the above scraper configuration as an example, the area of the side plate, in this case $\frac{(9 \text{ ft.} + 8 \text{ ft.})}{2}$ x 8 ft. = 68 sq. ft., multiplied by the width (8 ft.) between side plates, gives a struck capacity of 68 x 8 = 544 cu. ft. or 20.1 cu. yd.

"When the top of the front apron, in the closed position, is below the top edges of the side plates, the capacity shall be limited either by planes following the contour of the side plates or by a plane at a slope of one vertical in one horizontal, whichever gives the smaller capacity.

"To determine the one - to - one slope for the limiting plane, the scraper shall be set in its normal carrying position with the apron closed."

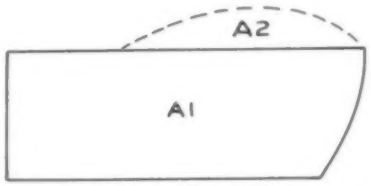


Volume = (A_1 + A_2) width. (Side view of scraper bowl)

The above paragraphs are included to take care of situations like the one illustrated. Here the struck capacity is determined by taking the area of the side plate, plus the area enclosed by the broken line, multiplied by the width between side plates. However, if the line from the top of the apron to the top of the side plate is greater than 1:1, then a 1:1 slope is used in determining the struck measure.

"Mechanisms which are not a part of the side plates but which are adjacent and will retain additional load shall be included in the determination of struck capacity.

"The volume occupied by apron arms, sheave frames, or other internal projections shall not be deducted from the struck capacity."



Volume = (A_1 + A_2) width. (Side view of scraper bowl)

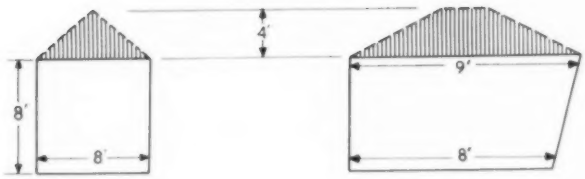
With a scraper design such as this, the struck capacity is the product of the area of the side plate, plus the area between the broken line and the top of the side plate multiplied by the width between side plates.

The above explanation would also cover the use of sideboards. They would increase the struck capacity by an amount equal to the product of the area of the sideboard times the width between sides.

"HEAPED capacity of a scraper shall be the volume enclosed by the bowl and apron and four planes at a slope of one vertical to one horizontal, extending upward and inward from the top of the front apron, from the top of the ejector or rear plate and from the top edges of the side plates. For scrapers of less than 12 - cu. yd. struck capacity, the heaped capacity shall be given to the nearest ½ cu. yd.; for scrapers of 12-cu. yd. struck capacity and larger, the heaped capacity shall be given to the nearest whole cubic yard."

"To determine the one - to - one slope for limiting planes, the scraper

*Reproduced by permission from *The Co-operator*, October, 1958, a LeTourneau - Westinghouse Company publication.

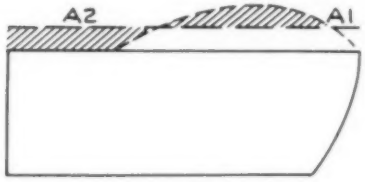


Rear view Side view

shall be set in its normal carrying position with the apron closed."

The struck capacity of the scraper was previously found to be 20.1 cu. yd. Because the width is less than the length, the height of the heap above the side plates will be limited by a plane of 1:1 slope from the side sheets. The illustration across the top of this page shows the shape of the heap, which has a height of 4 ft. and a base of 8 by 9 ft. The volume of this heap is 96.0 cu. ft. or 3.6 cu. yd., which, added to the struck measure, will give a heaped capacity of 23.7 or, rounded off, 24 cu. yd.

"If the top edge of the side plate (or extension thereof), front apron, or ejector is not a straight line, a mean line through its configuration may be used to establish the side planes of the heaped capacity."



$A_1 = A_2$
(Side view of scraper bowl)

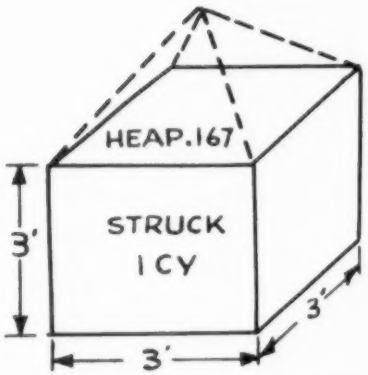
This definition is included to cover the designs such as the one shown here. In this case a mean line is drawn through the configuration in such a manner that the area of the side plate extension above the line is equal to the area beneath the line which is not a part of the side plate. The heaped capacity is then figured in the same manner as previously explained, using the mean line as the top edge of the side plates.

"The possible interference of overhead structures such as sheave guides and cables with the heaped capacity shall be ignored.

"Both the struck and heaped capacities as defined are, with minor reservations, definitely measurable quantities which delimit the probable loading characteristics of the vehicle."

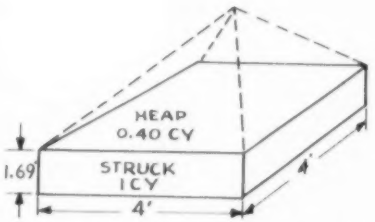
The above statement pretty well summarizes the reasons for designating struck and heaped capacities of scrapers. However, questions often arise as to which is the most important, struck or heaped capacity.

Scrapers of different makes often have the same struck but different heaped capacities, or the same heaped but different struck capacities. This variance between the struck and heaped capacities is basically one of design. The struck measure is dependent on the length, height, and width of the scraper bowl, while the heaped measure is dependent only on the length and width. As can be seen, the height of the bowl has no bearing on the heaped capacity, but is instrumental in determining the struck capacity. Therefore a long, low, wide bowl can have the same struck measure as a shorter, narrower, higher bowl, but will have a greater heaped measure because it has a larger top area due to its longer and wider bowl. *For an example see the accompanying sketches.*



A—Total heaped capacity = 1.167 cu. yd.

For reasons of simplicity we have used boxes to illustrate our point. Both boxes have the same struck capacity of 1 cu. yd., but box B has 20 percent greater heaped capacity. From this example, it should be apparent that although the struck measure is important, the heaped capacity gives a better indication of a scraper's load-carrying ability.



B—Total heaped capacity = 1.40 cu. yd.

2nd Quarter Gypsum Output Shows 21% Increase Over '57

Domestic mine production of crude gypsum during the second quarter of 1958, as reported to the U. S. Bureau of Mines, was 2,860,126 short tons—21 percent greater than in the second quarter of 1957. Output of calcined gypsum was 5 percent lower.

Second-quarter gains and losses among the gypsum products were irregular. Sales of all uncalcined gypsum products were upward, with portland cement retarder registering the greatest tonnage gain. Building and industrial plasters were off 11 and 29 percent, respectively, from the corresponding period of last year. All industrial plasters declined, whereas in the building category, increases were reported for prepared finishes, Keene's cement, and other building plasters.

Sales of gypsum board products totaling 1,700,000,000 sq. ft. were slightly less than in the previous second quarter. Increases were reported for wallboard, sheathing, and laminated board.

Plan $6,000,000 Cement Plant For Monte Alegre, Para, Brazil

Authorization has been obtained from the National Department of Mineral Production and the Agriculture Ministry to organize the Companhia Argo-Industrial de Cimento Portland da Amazonia, which will construct a new cement plant at Monte Alegre, Para.

The new plant will have a daily production capacity of about 6,000 bags. Capital subscribed will be approximately $6,000,000.

$14,000,000,000 road program of California sparks

Semi-Portable Jobsite Gravel Plant

By HARRY F. UTLEY

ANOTHER ON THE SPOT REPORT

THE booming road-building industry will demand untold millions of tons of aggregates and other processed rock, gravel, and sand in the next decade or so, as large-scale highway construction programs swing into high gear.

Rigid state and federal specifications for these materials make it seem likely that experienced commercial producers will be the logical suppliers of a lion's share of the huge tonnages required. It was therefore a natural move that John K. Larson of Terminal Rock & Sand Company of Littlerock, Calif., made early in 1958 when he formed the Terminal Construction Company and entered the field as an on-the-job producer of road materials with a high-capacity, semi-portable plant to serve these jobs.

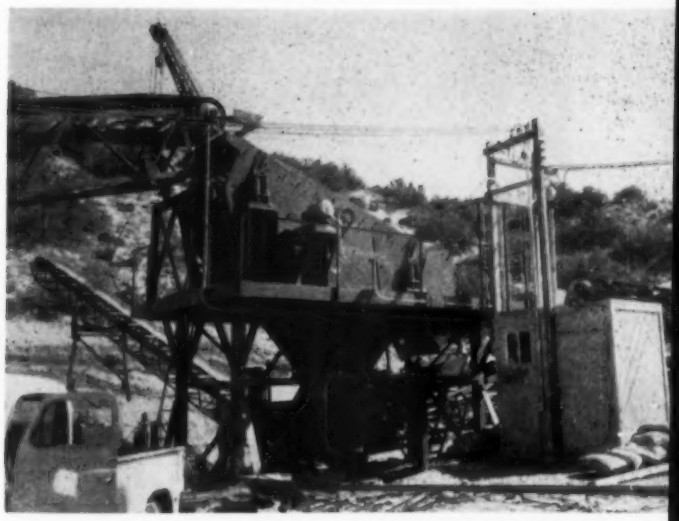
Terminal's initial contract started in August, 1958, when its new 300-t.p.h. production facility begun turning out an order for 700,000 tons of product—concrete aggregates, untreated crusher-run base materials, asphaltic and filter rock—for a road widening job. The work was undertaken as a sub-contract from the road builder, Guy F. Atkinson Company, and the new plant has been set up on a deposit near Gorman, Calif., conveniently close to the widening project on U. S. Highway 99 between Bakersfield and Los Angeles.

Overall view of the Terminal plant on the deposit in the Tehachapi Mountains near the U. S. 99 highway-widening project. Finished-product end of plant is in foreground.

Mr. Larson commissioned the Los Angeles engineering firm of Arthur E. Howland Company to design the new plant. Emphasis was to be on high capacity, efficiency, flexibility, plus speed in getting the facility designed and built. In a matter of less than 90 days from the time the Howland firm drew up its preliminary sketches, the plant was a producing reality.

All components are of steel construction, skid-mounted for movability, and bolted together in 8-ft. increments for the most part, also to aid portability. Connecting belt-conveyor sections may be inserted to extend the receiving hopper primary crusher, and scalping screen stations closer to the deposit as excavation advances. This allows the pit run to be delivered directly by bulldozer without the need for a shovel and trucks. Conversely, too,

Pit-run material is delivered to the surge hopper from an area within a radius of 200 ft. by a bulldozer with a side-wing blade. It is reclaimed via feeder in the tunnel, right, and conveyed to the roller-bearing jaw crusher, foreground.



Primary screen where surplus sand is taken out before material is conveyed to the final sizing tower. All conveyor headpulleys like the one shown feeding the screen are motorized and driven within the pulley shells themselves.

conveyor sections may be removed to close-couple the processing towers if that becomes necessary; and stacker belts may be easily re-positioned to change the stockpiling pattern.

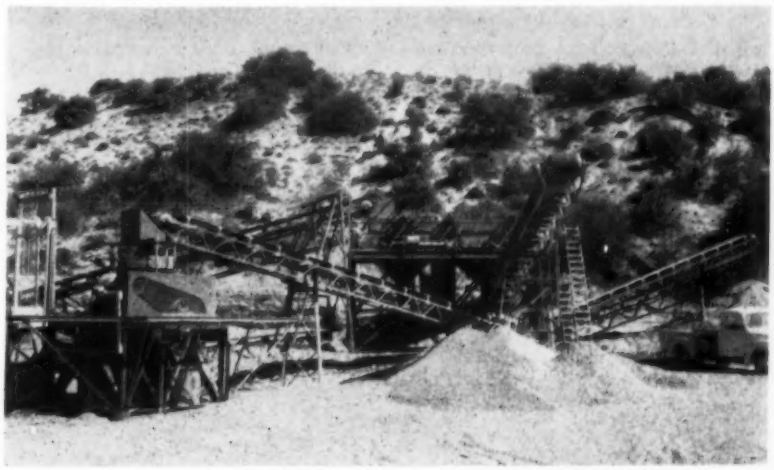
Just such a shift was already being made when the plant was visited soon after the beginning of production. The original layout called for two opposed wing conveyors to carry away an anticipated sand surplus from the primary screen. This high sand content failed to come quite up to expectations, and only one of the wing conveyors was required to handle the surplus take-out at the screen. The other 24-in. by 50-ft. conveyor section was relocated, in order to feed the remaining sand directly to the screw classified and thus step up washed concrete-sand output to meet a demand which had developed.

Each of the 12 conveyor sections is equipped with a Shrock motorized head-pulley. In specifying this type of drive, Mr. Larson was guided by experience gained in the stationary plant at Littlerock, where Shrock pulleys are used throughout.[1] These internal-drive, self-contained units require no external chains, sprockets, or belts and are particularly suited to portable plants since the pulley shell rotates around the electric motor and reduction gears, all encased within the shell.

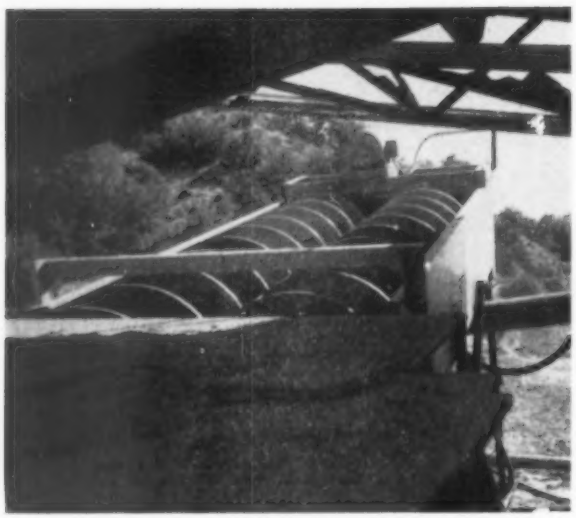
As set up for the Atkinson paving job, a Caterpillar D9 tractor fitted with a Model U bulldozer blade moves the pit-run gravel and sand into a 50-ton receiving hopper. Shepherd side wings on the 'dozer blade increase capacity and allow huge loads to be dozed to the hopper, giving maximum feed capacity of 900 t.p.h. within a 200-ft. radius of the surge hopper. An F-55 Syntron feeder loads a 36-in. by 88-ft. conveyor running up to the 22- by 36-in. Cedarapids jaw-crusher, and another 88-ft. conveyor delivers the crushed product to a 6- by 16-ft. Hewitt-Robins Vibrex double-deck dry-operated screen. It is at this point that excess sand is taken out and wasted, or conveyed to the sand washer.

Products of the Vibrex screen are combined and conveyed to the washing-and-sizing screen atop the final processing tower. This screen,

Washing and sizing is done by a 5- by 20-ft. self-energizing screen capable of processing close to 300 t.p.h. Cone crusher at left is in closed circuit with the screen.



[1] *California Plant Designed for Shallow River Deposit*, PIT AND QUARRY, August, 1956, p. 80-82.



Double-screw washer classifies and dehydrates all concrete sand before it is conveyed to stockpile. Screw diameters are 36 in. Pool area in foreground is covered to protect against contamination.

a big 5- by 20-ft. Hewitt-Robins "Hi-G" unit, is spray-equipped throughout, and three finished gravels—1 to 2 in., ½ to 1 in., and peagravel—are stockpiled by three 24-in. by 50-ft. stacker belts. Oversize is reduced as required by a 4¼-ft. Symons cone crusher in closed circuit, while the minus No. 4 throughs are processed by a 36-in. Eagle Iron Works double-screw sand classifier-dewaterer, and stockpiled by conveyor.

The 12 conveyors are so standardized and interchangeable that little shifting of equipment is required to change the plant setup, other than the conveyor sections themselves. Eight of the 12 are identical, 50 ft. long on centers; they carry 24-in. belting and have 10-hp. motorized head pulleys. Three are 88 ft. long and equipped with 36-in. belting and 30-hp. drive pulleys. The twelfth is a 36-in. by 200-ft. extension section for use in moving the hopper and primary processing equipment closer to the source of supply; it had not yet been put into service in the early days of production.

Each of the stockpiles can store up to 800 tons of material. Loading out to the contractor's trucks and truck-trailers is taken care of by two Michigan front-end loaders. Wash water requirements run about 550 g.p.m., and the water comes to the plant *via* a 500-ft. pipeline from a deep well and pump installed by the paving contractor.

Some indication of the future need for road aggregate in California is seen in the $14,000,000,000 program proposed to the state legislature in September, 1958, by the California Department of Highways. This ambitious plan would build a 12,250-mile system of 4- and 6-lane freeways during the next 15 or 20 years. These superhighways would link every one of California's 58 county seats and every population center of over 5,000 within the state. It is said to be the most comprehensive program ever planned or contemplated by any state.

Funkhouser Co. Acquired By Ruberoid as New Division

The Ruberoid Company plans to exchange shares of its capital stock for the assets and business of The Funkhouser Company, Hagerstown, Md., on or about December 1, 1958. Final terms of the acquisition, which have not yet been fully determined, are subject to approval of the board of directors of each company.

Ruberoid, a major producer of asphalt and asbestos building materials, operates 16 plants east of the Rocky Mountains. Funkhouser, founded in 1914, is reportedly, one of the largest manufacturers of roofing granules.

When the acquisition has been completed, the Funkhouser properties will be operated as a separate division of The Ruberoid Company, with headquarters at Hagerstown. Sales will continue to be handled under the supervision of Richard N. Funkhouser, who is now vice-president and assistant treasurer.

Calcium Chloride

(*From page 121*)

ing, with extensive voids through which water can escape in either filtration or thickening operations. Dispersion is promoted by dilution, by hydrous particle surfaces, by similar electrical charges on the particle surfaces, or by protective colloids. Flocculation, on the other hand, is promoted by addition of a proper amount of electrolyte to discharge particles, by thick pulps, and sometimes by heating, unless this promotes solution of dispersing salts. Also effective is the addition of salts which precipitate as insoluble compounds the salts that have a dispersing action. Heating probably promotes flocculation by reducing the surface tension and viscosity of the water.

Since lime is a satisfactory electrolyte in many cases and since it promotes flocculation, it is probable that with certain salts present, lime promotes precipitation of hydrous particle surfaces and consequent dispersion and poor filtration rates. Calcium chloride, on the other hand, acts as a true electrolyte; it tends to discharge the particles and results in flocculation and random piling, with good filter rates.

In order to develop a practical method of using calcium chloride, a standard water hardness test on the filtrate was correlated with the production rates of the filters and additions of calcium chloride. It was found that filter rates increased rapidly until 800 parts per 1,000,000 was reached, and that after this point the gain was less. This standard has been used for several years. It is recognized that this type of control would not result in the same addition of calcium chloride to other raw materials. The requirements will vary widely, depending on the type and quantity of dispersing salts present.

GEORGE S. GUSTAS is the new division assistant in Chicago for the Mideast Gypsum and Lime Division, United States Gypsum Company. Mr. Gustas was transferred from the Oakfield, N. Y., plant.

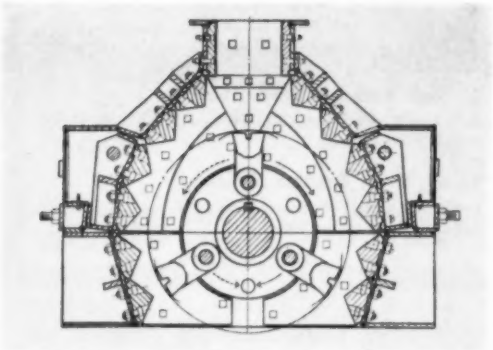
NEIL F. GARCEAU, formerly of the Chicago headquarters, was made board engineer at Oakfield.

WILLIAMS REVERSIBLE IMPACTOR

Up to 250 tons of aggregate hourly with only 6 men!

Illustrated is Williams No. 445-X Reversible Impactor powered by 250-HP motor. Preceded by a 30 x 42 jaw crusher and apron feeder, and followed by gradation screens in closed circuit, up to 250 tons of aggregate per hour was obtained to meet these Tennessee Highway Dept. specs.:

100	Percent	1"	Passing
80-95	Percent	¾"	Passing
50-85	Percent	⅜"	Passing
36-65	Percent	No. 4	Passing
20-43	Percent	No. 16	Passing
10-21	Percent	No. 100	Passing



Cross section of Impactor. Note wide gap between hammers. High drop chute feeds rock between hammers so it is thrown against impact blocks to set up a ricochet action. Center impact blocks are adjustable with relation to hammers.

The beaming smile on Clarence Duke, co-owner of Burns Stone Company of Burns, Tennessee, indicates his complete satisfaction with the amazing output of his Williams Reversible Impactor. Hitting the Tennessee Highway Department's tightest aggregate specification right down the middle on the "fine" side, the Williams Impactor produced an average of 200 tons-per-hour, frequently reaching *250 tons hourly with only 5 men and Mr. Duke*. Performance was so gratifying he ordered another Impactor for the Burns Company plant at Cumberland Furnace, Tenn. Ben Ferguson, at right, is representative for Southern Machinery Company, Williams' distributor for middle Tennessee and north Alabama, which designed and furnished equipment for the Burns' plants.

HIGHER OUTPUT of BETTER PRODUCTS at LOWER COST

- **100% product sizing** is assured with a Williams Impactor
- **Lower upkeep expense.** No close clearances of impact hammers and blocks have to be maintained.
- **Reversible rotor** doubles life of wearing parts. Eliminates manual turning of hammers.
- **Completely open discharge** allows unrestricted flow of finished material. Closed circuit operation takes out crushed material as fast as made. No over-crushing or grinding.
- **Accessibility-plus!** Easiest of all crushers to service. Complete rotor removable without disturbing any feed mechanism.
- **Heavy steel plate frame**—forged steel oversize rotor shaft—extra heavy alloy steel hammers and impact blocks—many other exclusives insure longer, lower-cost operation.

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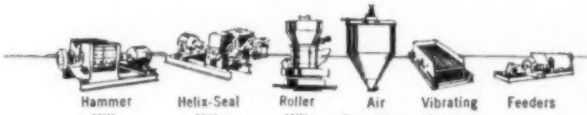
WILLIAMS PATENT CRUSHER & PULVERIZER CO.
802 ST. LOUIS AVE. St. Louis 6, Mo.



WILLIAMS
CRUSHERS GRINDERS SHREDDERS
Oldest and Largest Manufacturers of Hammer Mills in the World

Super V-belts on tough drive save $1000

Especially designed to withstand heat, oil and the heaviest shock loads, Gates Super Vulco Ropes solve tough drive problems and reduce both maintenance and replacement costs.

For instance: Hackney Iron and Steel Company, Enid, Oklahoma, formerly used a flat leather belt to drive the hydraulic pump on its huge forming press. This belt—only 18 inches from the red hot steel being shaped—would stretch, slip and come off the drive.

When a new press was installed, a compact, dependable Gates Super Vulco Rope was substituted. This drive—operating 8 hours a day for 5 years *without lost time for maintenance*—has saved the company more than $1000.

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Drive data and design assistance are quickly available to you. Simply call your nearby Gates Distributor. Gates V-Belt stocks are carried in all major industrial centers.

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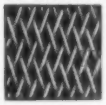

A Gates exclusive: provides greater flexibility...prolongs belt life...helps deliver more power to driven machine.

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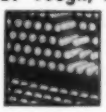

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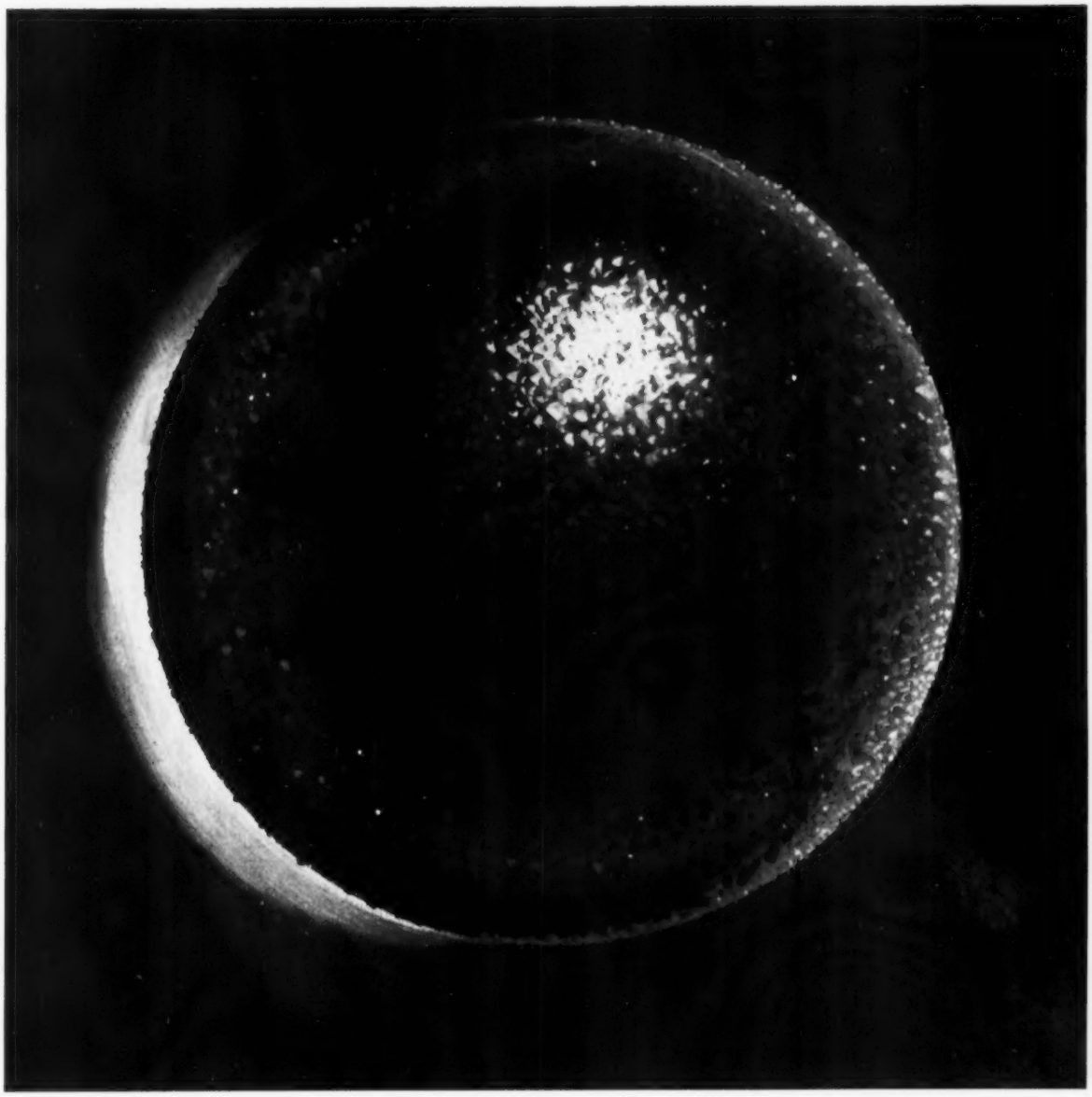

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*Convention registrations will begin at The Roosevelt Friday morning, February 13.

*Committee meetings start February 13. General sessions open Tuesday, February 17 and continue twice daily through Thursday afternoon.

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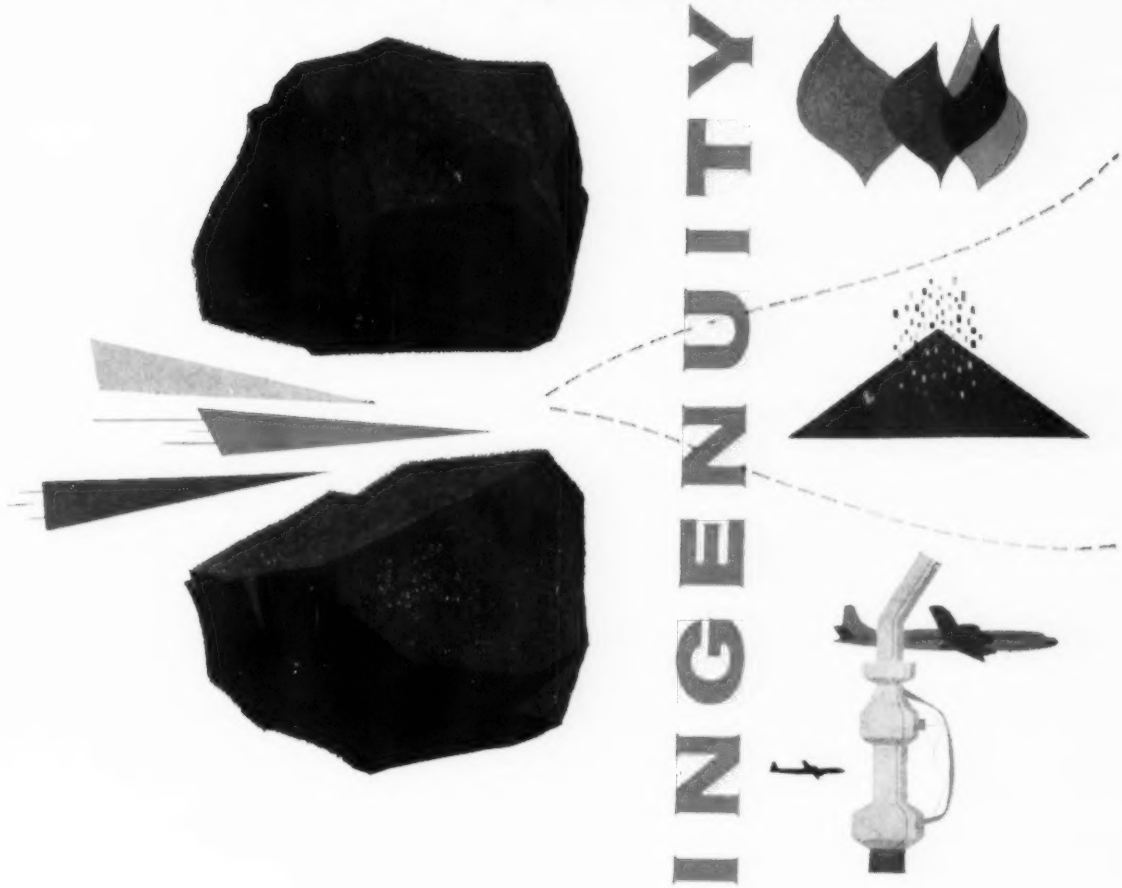

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(This space contributed as a public service by this magazine.)

Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Jury Decides Damages

Discussion has arisen from time to time over this legal question: "If a contractor causes damages to adjacent property by excavation work, for what amount of damages is the contractor liable?"

The jury will inspect the premises, and listen to testimony presented by both the contractor and the owner of the damaged property. Then the jury will render its judgment based upon its good judgment and this evidence.

A review of late and leading decisions shows that the higher court usually approves a verdict rendered by a jury after the latter has taken into due consideration the testimony of expert witnesses, as to the amount of damages which should be rightfully allowed the owner of property damaged by excavation work.

For example, in *Clifford v. State*, 148 Pac. (2d) 303, a property owner sued an excavating contractor for $25,000 damages alleged to have been caused by the unlawful encroachment and casting of material upon his real property by the contractor during excavation work. The contractor admitted encroachment upon the real property but denied damage to the property in the amount of $25,000.

The jury inspected the damaged real property and took into consideration the testimony of experienced realtors and appraisers who were familiar with values of real property in that area. All testified that the market value of the real property prior to the invasion by the contractor was $35,000 and that the depreciation in value, resulting from the encroachment, was $10,000.

In view of this testimony, the jury rendered a judgment in favor of the property owner for $10,000. The contractor appealed to the higher court, which, however, upheld the verdict.

This higher court went on to explain that since the jury actually had inspected the damaged property and also had listened to testimony given by expert appraisers, its decision was primarily proper and correct and should not be modified or reversed.

Avoid Liability For Injuries To Children

A contractor asks the question, "What responsibility has an excavation contractor to protect children against burns when playing around flares?"

If an excavating contractor permits children to play around dangerous flares or machinery, he may be held liable in damages for injuries subsequently sustained by a child.

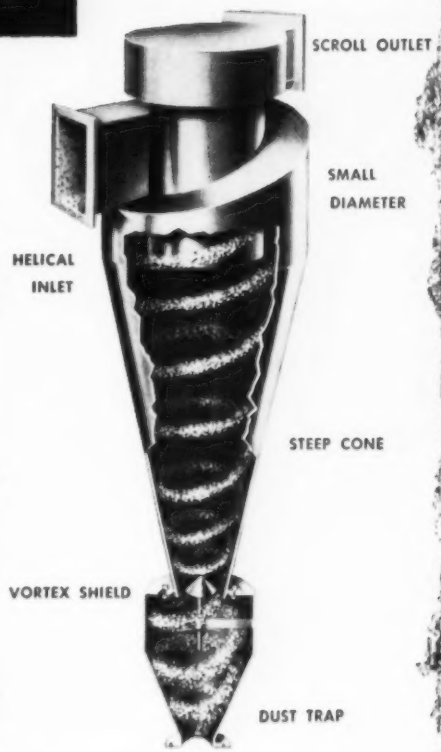
In *Schmit v. Spring*, 13 N. W. (2d) 382, the testimony showed that a contractor, doing excavating work in a city, had its employee place several flares at the edge of the excavation to indicate the danger. Further testimony proved that the contractor knew for three weeks previously as the work progressed, that children in the neighborhood were accustomed to play in the sand around the excavation and around the flares after they were set out.

One night a small boy was severely injured when his clothes caught fire from one of the flares. His parents sued the corporation for damages.

The higher court held the parents entitled to a recovery for heavy damages, saying that the testimony showed that the contractor had knowledge that the children were in the habit of playing around the excavation, and he *did nothing* to safeguard them from the damages.

In other words, this court held that when a contractor knows that flares or the like may cause injuries to children, such contractor must do something to protect the children from the danger.

. . . in dry dust control



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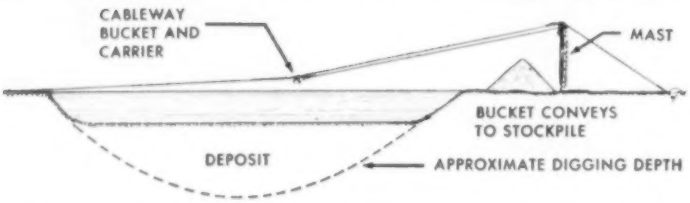

A Sauerman Slackline Cableway has been excavating material for Olean Gravel, Inc. since 1930. The 1½-yd. bucket has an operating span of 1200 ft., with an average haul of 900 ft. Depth of the pit is approximately 85 ft.

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For comparison, see *Clark v. Bremerton,* 1 Wash. (2d) 689. Here the testimony showed that a flare on the edge of an excavation was instrumental in the death of a ten-year-old boy who was playing with it. The court refused to hold the contractor liable for death of the boy and said:

"The testimony shows that the accident was brought about by the child's own intermeddling with the lighted flare pot."

In this case, however, the testimony showed that the contractor doing the excavation work had no knowledge that children customarily played around the flares.

Bill of Lading Limitation Valid

The owner of a rock quarry wanted to know whether a shipper or consignee is held by a clause in a bill of lading which requires a claim to be filed with a common carrier within nine months after delivery of rock. Such a clause has been held valid by various higher courts.

The courts hold that ordinary contracts are valid which limit the time in which a shipper or consignee must file a claim to recover for lost or damaged merchandise.

For example, in the leading case of *Chicago v. Kileen,* 9 N. W. (2d) 616, the testimony showed that a common carrier sued a contractor consignee to recover freight charges for the transportation of sand and gravel from the pit of the Wissota Sand & Gravel Company. There were in all 88 separate shipments. The testimony showed that the carrier furnished its cars at the Wissota Sand & Gravel Company's pit when and as ordered by the contractor. Each shipment moved under a separate bill of lading. The bills of lading were made out at the Wissota Sand & Gravel Company's pit, and the cars were receipted by the carrier's agent. On each bill of lading was a printed stipulation that a claim for lost or damaged merchandise must be filed with the carrier within 9 months from delivery of the merchandise.

The contractor consignee defended the suit on the contention that the limitation clause is void and also that there were 1,859.25 tons of sand, and 2,039.68 tons of gravel lost, for which the contractor con-

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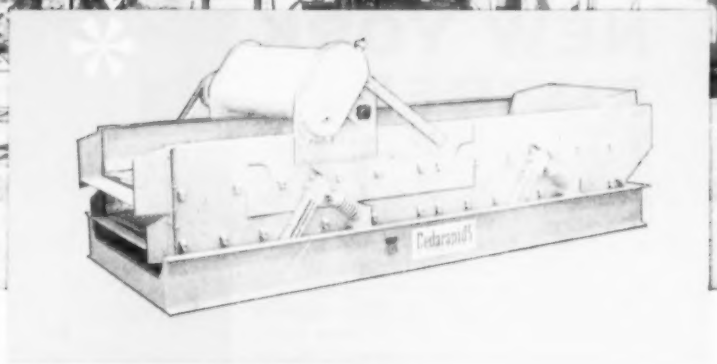

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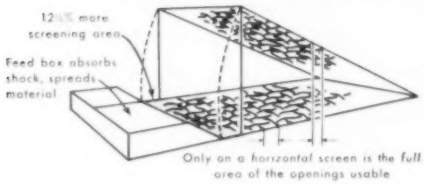
12½% more screening area
Feed box absorbs shock, spreads material
Only on a horizontal screen is the full area of the openings usable

Since any given length of screen provides maximum screening area when in a horizontal position, Cedarapids Horizontal Screens give as much as 12½% more screening area than an inclined screen of the same length. In addition, horizontal screen cloth openings are more nearly at a right angle to the fall of material and the full area of each opening is available for sizing. More material of the proper size goes through each opening, which means that size for size, Cedarapids Horizontal Screens give both higher capacity and more efficient gradation than is possible with an inclined screen.

Since way back in 1935, Cedarapids Horizontal Vibrating Screens have been the standard of profitable production. Because of their *horizontal* design, Cedarapids Screens give up to 30% greater screening capacity, assure more accurate gradation, and increase over-all plant capacity by their more efficient, snappy, live vibratory action. Because of their expertly engineered design and top quality construction . . . typified by fully stress-relieved boxes and screen frames . . . Cedarapids Screens have a long, trouble-free service life.

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signee paid Wissota Sand & Gravel Company.

Since the claim was not filed by the contractor in writing within the nine-month period, the higher court held the carrier entitled to a full recovery of its alleged freight charges, and (stated) that the contractor could not recover. The court said:

"The fact that all shipments in question were intrastate does not change the rule with reference to the necessity of filing a claim or claims in writing within nine months after delivery of the property, as a condition precedent to right of action against the carrier. Undoubtedly, it is the general rule that as to all shipments under a uniform bill of lading, written notice of claim for loss or damage cannot be waived."

Public Officials Exceed Authority

A reader asks whether a seller can collect payment for materials used by a county which purchased the materials under a contract made by an unauthorized official.

Generally speaking, the higher courts hold that a purchase contract made by an unauthorized county official is void, and the seller cannot collect payment from the county although the county used materials delivered by the seller believing that the county would pay for the materials.

For example, in *Bear River Sand & Gravel Corporation v. Placer County,* 258 Pac. (2d) 543, the testimony showed that a state law provides that county highway commissioners can make valid contracts for purchase of materials only when the contract is approved by the county board of supervisors.

The Bear River Sand & Gravel Company sued a county for several thousand dollars damages, claiming that the county's highway commissioner had made a contract for the purchase of crushed rock for use on county roads, and that the county had breached this contract.

Since the testimony showed that the county board of supervisors had not countersigned or otherwise approved the contract, the higher court held the county not liable on the grounds that the contract was invalid. This court said:

"If Barieau (commissioner) ordered the crushed rock for the county, he had no authority in the law to do so, and his act was void. The void acts of a public officer cannot be ratified."

In *Reams v. Cooley,* 152 P. 293, the testimony showed that a county officer in good faith purchased a large quantity of materials, which the county used on its roads. However, the county's officer exceeded his authority given by state laws, when making the purchase contract. Therefore, the higher court refused to hold the county liable for payment of any money to the seller of the materials. The court said:

"No government, whether state or local, is bound to any extent by an officer acting in excess of his authority even though it has received substantial benefits deriving from the act."

Compromise Contract Void

An official of a quarry company wants to know whether he should make a deal with an injured employee and pay him money to settle finally the claim to avoid future con-

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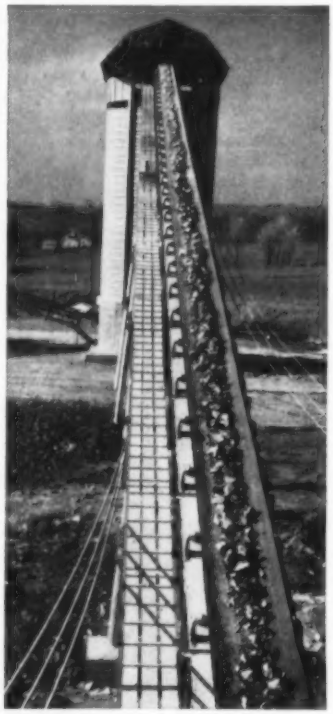

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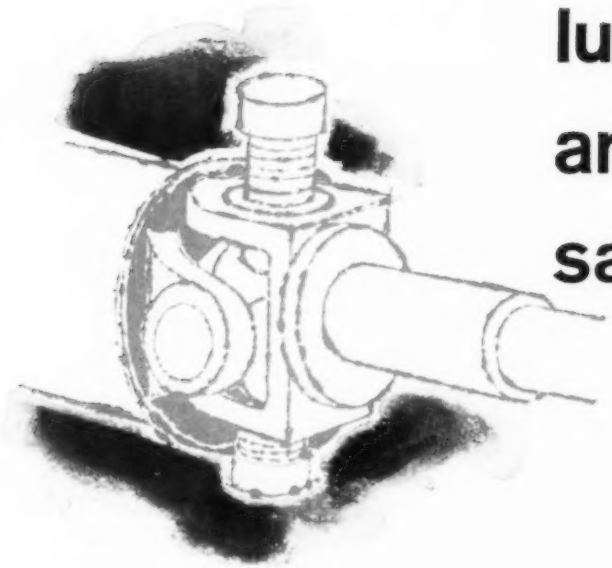

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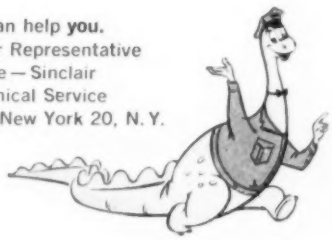

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troversy with the Industrial Board under the State Workmen's Compensation Act. The answer is definitely no.

According to a recent higher court decision, it makes no difference whether an injured employee signs a release or compromise with his employer; he can recover additional compensation if later the Industrial Board believes the employee is entitled to it.

In *Mondillo v. Ward*, 57 Atl. (2d) 447, it was shown that the driver of a gravel truck sustained an injury by having his right foot, ankle, and lower leg run over as he was alighting from his truck.

The employer paid the injured employee certain compensation. Later he made a final *settlement* for cash, and the employee signed a receipt relieving the employer from further payment.

Six years later the employee sued for additional compensation. The higher court allowed additional compensation, based on testimony of the employee's present disability, and disregarded the compromise agreement previously signed by the employee.

Must Erect Protective Covers

A cement contractor states: "I have three suits on my hands filed by owners of automobiles who claim that their cars were splattered with white paint when they were driving under a bridge which my employees were painting at the time. They claim that they must have their automobiles repainted. What are my legal rights in this matter?"

You are liable in damages to the owners of these automobiles. In other words, your employees were negligent in not providing protection against paint dropping onto these automobiles.

In almost all suits filed by persons against contractors to recover damages for injuries caused by the latter's employees, the courts believe that the contractor is liable if the injuries could have been avoided by "ordinary care." In other words, if "ordinary care" was not used by the employees to prevent the injury or damage, the contractor is liable.

For illustration, in *Eagles v. National Plate Company, Inc.*, 45 N. E. (2d) 402, it was shown that a contractor was engaged in installing a store front around the first floor of a building. An employee of the contractor was working on a staging erected over the sidewalk, which was not covered.

A pedestrian felt something drop into his eye, and experienced severe pain and a burning sensation. Immediately he visited a doctor, who removed several particles of dark substance from his eye. Severe injury resulted to his eye.

He sued the contractor for damages. In view of the fact that the contractor's employee had not taken precautions to cover the staging to prevent the plastic substance or cement from falling on pedestrians, the higher court held the contractor liable in damages to the injured pedestrian.

Blasting Liability

An official of a large rock quarrying corporation asks this legal question: "What are the differences in blasting liability where the contractor's blasting throws mud, stones, and debris on adjacent property, and where the blasting causes dam-

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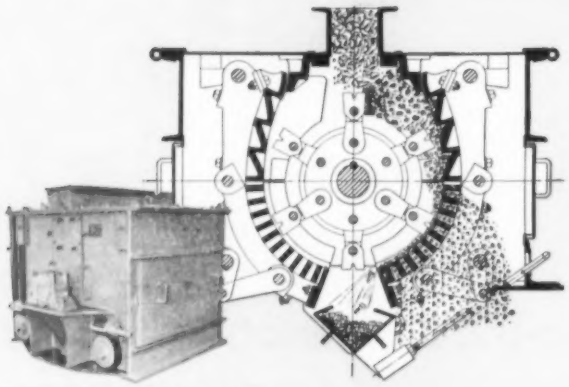

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Non-Clog Hammermill

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age resulting from concussion?"

There are considerable legal differences, and consequent damage liability.

In *Gibson v. Womack,* 281 S. W. 1001, it was shown that a blasting rock contractor carefully prepared the charge. Nevertheless, stone was caused by the blast to roll down a hill and injure a pedestrian, who sued the contractor for damages.

In subsequent litigation, the higher court held that if a blasting contractor invades the premises of his neighbor, by throwing stones and debris thereon, he is always liab'e for the resulting damages. On the other hand, if the injury results from the mere concussion of the atmosphere, sound, or otherwise, there is no liability unless the testimony proves that the blasting was done negligently.

For comparison, see *Henry Hall v. Sundestrom,* 139 N. Y. 391. This court said: "Blasting upon one's own or leased premises is not an unlawful act. Such blasting necessarily causes vibration of the earth and air to a greater or less extent. Hence, it must follow that if rightfully and not *negligently* caused, even though consequential injuries result therefrom, the sufferer is without remedy. . . . But when the results of blasting cause dirt and stones to be cast upon the premises of another, so that there is an actual physical invasion thereof, the question of negligence or want of skill is wholly immaterial."

In other words, under the latter circumstances, the contractor is liable although he is not negligent.

And again in *Beam v. Birmingham,* 10 So. (2d) 162, the testimony showed that a contractor caused noise, smoke, dust and soot to fall upon nearby residences. The lower court refused to hold the contractor liable because the property owner failed to prove that the contractor was "negligent." However, the higher court reversed the lower court's verdict, and said:

"Negligence is not a necessary element of a nuisance as here charged."

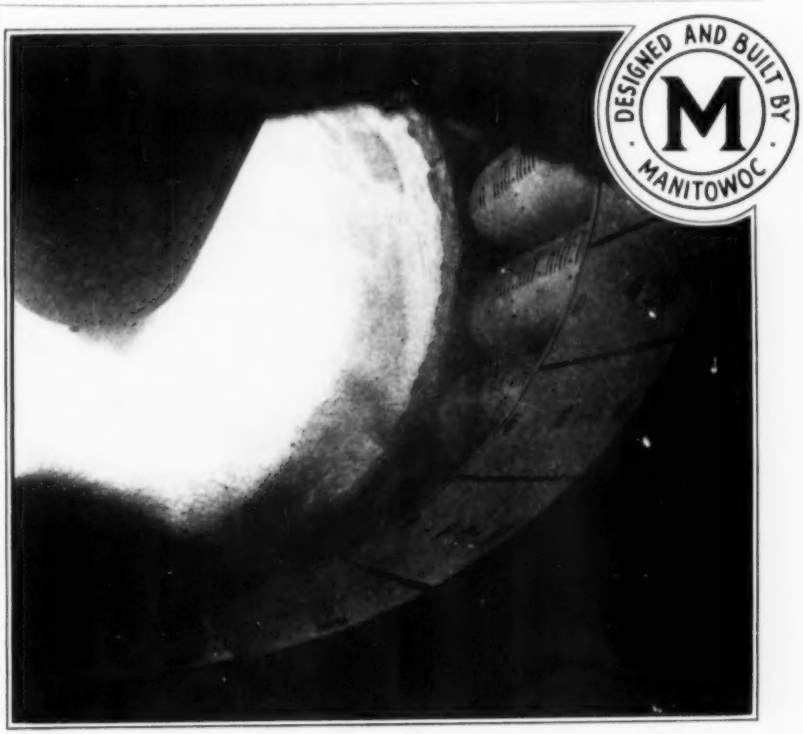
Decision Based Upon Analysis

This legal question was recently submitted by the owner and operator of a monument company. He asked: "If an employer takes care to provide dust-removing equipment, can he avoid responsibility and liability when an employee contracts the disease of silicosis?"

A leading higher court answered this question in the affirmative. This higher court indicated that if the analysis of dust proves that silicon is not present in sufficient amount to cause the disease of silicosis, the Industrial Commission may rightfully refuse to award compensation to an employee who contracted this disease.

For example, in *Dalla v. State Compensation Commissioner,* 28 S. E. (2d)827, it was shown that an employee filed suit against his employer to recover compensation under the State Workmen's Compensation Act for silicosis, which he allegedly contracted while working for the employer.

While the case was pending before the commissioner, the employer had samples of the air at and near the employee's working place chemically analyzed in order to ascertain the quantity of silicon dioxide it



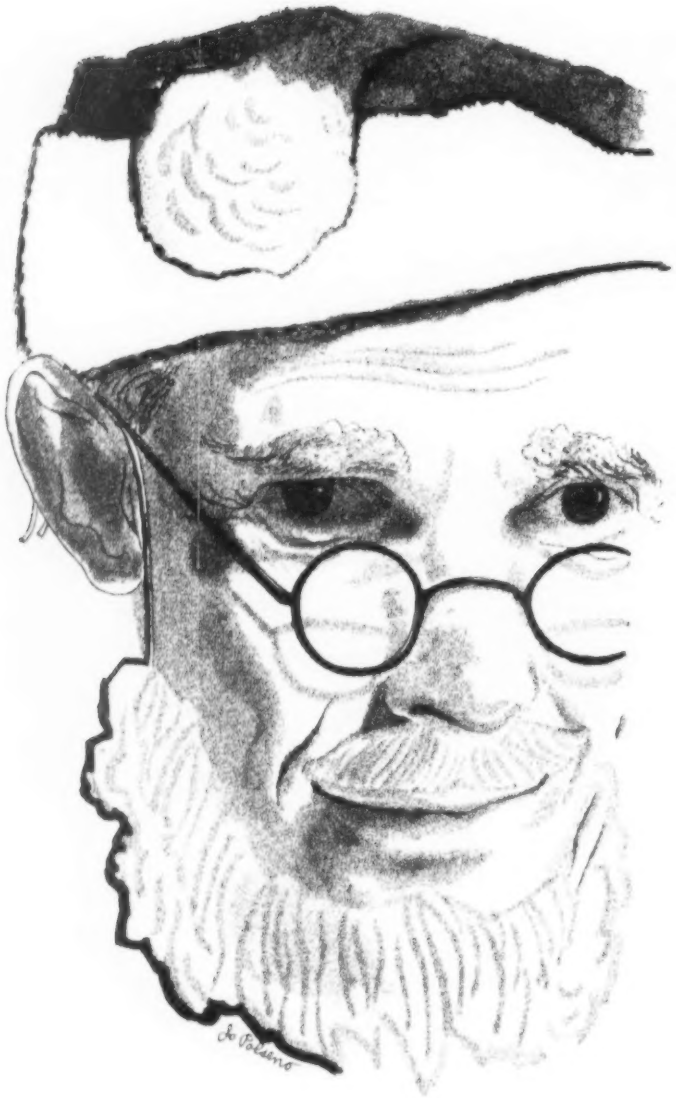
Proof of Performance

The kiln illustrated is equipped with the Type F Recuperator. It presents conclusive proof of claims made for Recuperator performance, namely, rapid air quenching and cooling with immediate ignition of the fuel-air mixture at the tip of the burner pipe. It will also be observed that visibility inside the kiln is exceptional.

MANITOWOC SHIPBUILDING, INC.
MANITOWOC, WIS.

Enter 139 on card, page 105

We took a sage suggestion from Santa



"This Christmas check is wonderful," our office Santa Claus told us last year while he was making up for the office party. "But you should have enclosed an application card for more U.S. Savings Bonds on our Payroll Savings Plan. The time to persuade me to *invest* money is when I *have* money."

That was such a sound idea that this year all our Christmas checks to employees will be accompanied by a Payroll Savings card and the suggestion that the recipient sign up immediately for the regular purchase of U.S. Savings Bonds through the coming year.

Experience shows that whenever a company makes it easy for employees to set up sound savings plans, people welcome this opportunity. Today there are more payroll savers than ever before in peace time. For helpful suggestions and the newest information folders and leaflets, call your State Savings Bonds Director. You'll find him listed in the phone book. Or write: Savings Bonds Division, U.S. Treasury Dept., Washington, D. C.

PIT & QUARRY PUBLICATIONS, INC.

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTISM, THE ADVERTISING COUNCIL AND THE DONOR ABOVE

"In plant" service records prove

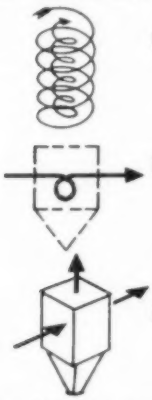
For Centrifugal Collection of Kiln Dust...

NOTHING EQUALS THE 24 IH MULTICLONE

That's a big statement—

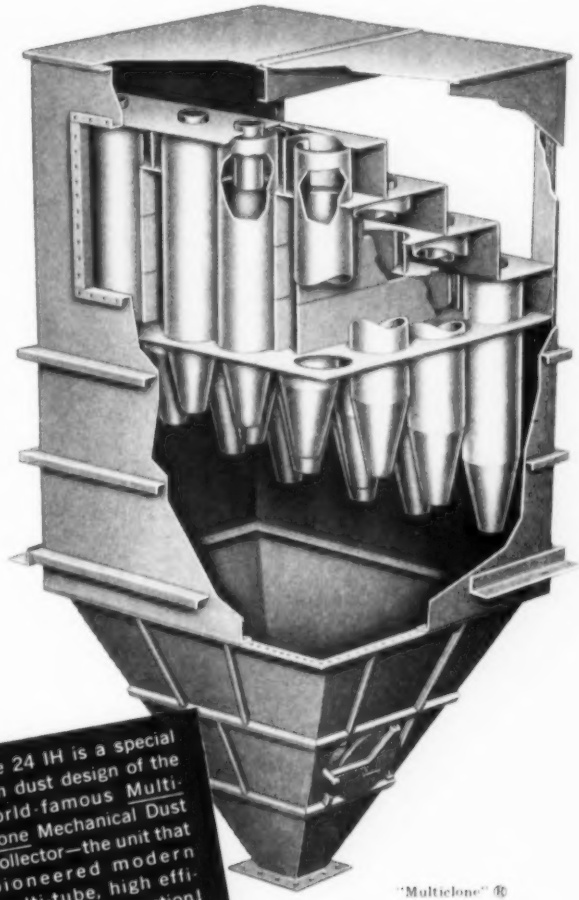
but the proof behind it is even more impressive

The 24 IH has over 7 years of actual plant service behind it—not just one or two installations, but in a wide range of cement plants in all parts of North America with many types of kiln dust collection problems. In one application after another the 24 IH Multiclone Collector has proven to be:



- the most efficient of any mechanical equipment for kiln dust collection because of its high speed centrifugal cleaning action!
- the most trouble-free of any unit, because its straight "in line" flow design and large diameter tubes prevent clogging and costly down time for servicing!
- the easiest to install because its simple cubic design fits new or existing plant layouts!

In addition, convenient rodding holes can be installed in cover and inlet panel to simplify tube cleaning while the unit is in service...and where high sulfate conditions exist, removable outlet tubes can be supplied to cut maintenance costs.



"Multiclone" ®

The 24 IH is a special kiln dust design of the world-famous Multiclone Mechanical Dust Collector—the unit that pioneered modern multi-tube, high efficiency dust collection!

The 24 IH MULTICLONE will give you completely new standards of performance—higher efficiency, lower maintenance, longer life, and maximum adaptability to *your particular* operating requirements!

Our representatives will gladly supply complete details. Or write direct.

COTTRELL Electrical Precipitators
MULTICLONE Mechanical Collectors
CMP Combination Units
DUALAIRE Jet-Cleaned Filters
THERM-O-FLEX Hi-Temp Filters
TURBULAIRE-DOYLE Scrubbers
HOLO-FLITE Processors
HI-TURBIANT Heaters

WESTERN
PRECIPITATION
CORPORATION

Engineers and Constructors of Equipment for Collection of Suspended Material from Gases ... and Equipment for the Process Industries

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Representatives in all principal cities

Precipitation Company of Canada Ltd., 8285 Mountain Sights Avenue, Montreal 9

Enter 141 on card, page 105

contained; the research division of the Compensation Commissioner's office also made an exhaustive examination of the same nature. Both of these reports were to the effect that no harmful quantities of silicon dioxide were discovered in the air.

In view of this testimony, the Industrial Commission refused to award compensation to the employee, and the higher court approved the verdict, saying: "It is apparent that there is no showing that the applicant (employee) during working hours and at his place of work was exposed to silicon dioxide dust in harmful quantities for any length of time."

Steam Shovel Defective

The operator of a sand and gravel plant is stuck with a used steam shovel which he bought from a seller who told him that the shovel was in good condition. He says that the shovel is defective and no good, and he wants to know what he can do to recover damages from the seller.

The higher court very consistently holds that a seller of equipment is liable for full damages caused a purchaser who was induced by fraud to enter into the contract of sale.

In *Meyer & Greenwald Const. Co. v. Calina Gravel Co.*, 277 Pac. 274, the testimony showed that a seller sold a steam shovel to a stone and gravel company. The gravel company paid $1,000 down, paid the freight amounting to $346, and gave its notes for the balance due.

After the employees of the gravel company had unsuccessfully endeavored to operate the shovel, the officials complained to the seller that the machinery was worn out. Later the company sued the seller for cancellation of its notes, repayment of the down payment and the freight charges, and loss of time and expense in endeavoring to operate the shovel.

During the trial, officials of the gravel company introduced testimony proving that for the purpose of inducing the sale, the seller had written letters stating that the shovel was in good condition.

In view of this evidence the lower court held the seller fully liable, and the higher court indicated its approval of the decision, stating important law, as follows:

". . . If the contract was induced by fraudulent representations, and if the defendant (gravel company) within a reasonable time after discovery of the imposition offered to rescind the contract, the gravel company is entitled to recover and to have the notes canceled, to recover the down payment, and also the amount paid for freight."

Patents Give Protection

Questions which cause much discussion are the following: What real protection does a patent give an inventor? What different kinds of patents are issued to inventors, and what is the cost to the inventor of obtaining a patent? Also, can an inventor have protection without filing his application for a patent in the United States Patent Office?

First, it is important to know that patents are subdivided into classes of Machines or Improvements, Articles of Manufacture, Compositions of Matter, Mechanical Processes, Chemical Processes, and Designs.

GOT WATER?

GET

FLYGT

. . . THE 24-HOUR PUMP

Reasons for the world-wide success of FLYGT B-80L pumps:

Electric, fully submersible, fully portable (185 lbs)
Instant pumping — no priming, no installation
Runs dry without damage
Takes high proportion of solids
Practically no maintenance or supervision
Frost- and fire-proof
6 hp, 3" hose, 330 GPM, max. head 170 ft.

Also: FLYGT B-38L — 1.8 hp, 75 GPM, 70 lbs, max. head 90 ft., 1½" hose; FLYGT B-80 Marine—6 hp, 330 GPM, max. head 145 ft., 3" hose; FLYGT B-150/200L — 65 hp, 3,000 GPM, max. head 220 ft., 6" or 8" hose, 1200 lbs. Higher heads with FLYGT pumps in tandem.

(CLIP AND ATTACH TO YOUR LETTERHEAD)

East of the Mississippi:
STENBERG MANUFACTURING CORPORATION
Hoosick Falls, N.Y.

West of the Mississippi:
Stanco MFGS. & SALES INC
1666 Ninth St., Santa Monica, Calif.

Please rush full information on FLYGT pumps.

Required capacity: ..... GPM at ..... ft. head.

Signature: .....

SOME DISTRIBUTORSHIPS STILL AVAILABLE

Enter 142 on card, page 105

THE NEW JOY TDM TRAC-DRILL

Now you can get faster drilling with less wear on bits, steels and drill rotation parts. You can get smoother, straighter holes for easy loading. The Joy TDM is a heavier machine with long, wide tracks . . . extremely stable. The extra weight and a heavy "U" bar drill mounting keeps the drill, the steel and the bit in perfect alignment in the hole. Spotting and collaring are easier because the feed is rigid.

All movements of the TDM are power operated. A big air motor (11.5 hp) powers each track for fast, precise moving. A powerful hydraulic pump powers the feed for swing, tilt and dump . . . fast, effortless positioning for drilling at any angle. Mounting the Joy TM-450 drifter drill, the TDM can put down a maximum 4" dia. blasthole up to 40 feet deep. For mass production of deep holes, better check into the Joy TDM TRAC-DRILL. Write for bulletin 259-26.

JOY Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.
IN CANADA: JOY MANUFACTURING CO. (CANADA) LTD., GALT, ONTARIO
EQUIPMENT FOR CONSTRUCTION

PORTABLE AND SEMI-PORTABLE AIR COMPRESSORS • ROCK DRILLS • TRAC-DRILLS • DRILL BITS • BACKFILL TAMPERS • SPADERS
PAVING BREAKERS • SHEETING DRIVERS • DRIFTERS • PORTABLE HOISTS • FANS AND BLOWERS • PORTABLE SAFETY LIGHTING

Each of the five first kinds issue for 17 years. A design patent issues for 3½, 7, or 14 years as the inventor may elect, and relates only to the exterior appearance of the invention, which must be ornamental and attractive.

The following U. S. Court and Commissioner of Patents excerpts are interesting:

"The man who secretes his invention makes easier and plainer the path of no one. He contributes nothing to the public. The law owes nothing to the inventor who hides away his invention, and to permit him to lie and wait for one who independently and in good faith proceeds to disclose the invention to the public would be against the policy of the patent laws. In the eyes of the law he is not the prior inventor." (App. D. O. 1914) *Brown v. Campbell*, 201, O. G. 905.

DICK TONASCIA, formerly payroll supervisor and safety director of the Basalt Rock Company, has been appointed transportation manager. He will supervise the company's trucking operations.

Manufacturers' News

Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio, has appointed the Lutherville Supply & Equipment Company, Lutherville, Md., as distributor for Lima Austin-Western crushing, screening, and washing equipment.

Their territory covers the District of Columbia, the state of Maryland with the exception of Garrett and Allegany counties, and Kent and Sussex counties in Delaware.

JOHN W. BODWELL and ROBERT T. HARVEY were named assistant general managers of sales for Joseph T. Ryerson & Son, Inc., Chicago, Ill. In addition to their new general sales duties, Mr. Bodwell will continue as manager of work order sales and Mr. Harvey will retain responsibility for aluminum sales.

P. H. MULCAHY has been named general manager of WEMCO, a division of the Western Machinery Company, San Francisco, Calif.

Mr. Mulcahy was formerly vice-president and general manager of the Rietz Manufacturing Company, Santa Rosa, Calif., and West Chester, Pa.

P. H. Mulcahy

R. C. Johnson

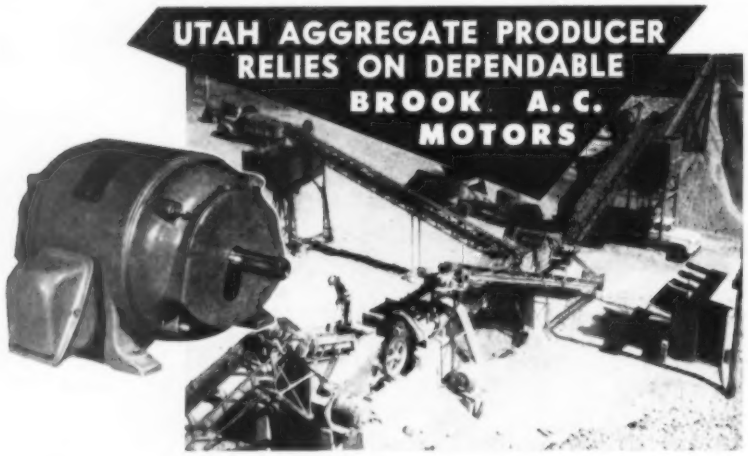
ROBERT C. JOHNSON has been appointed district sales representative by the Iowa Manufacturing Company, Cedar Rapids, Iowa.

Mr. Johnson will represent the Cedarapids line of aggregate producing, bituminous mixing, and paving equipment. His territory will include Arkansas, Louisiana, Oklahoma, and Texas, with headquarters in Dallas.

A new processor of magnetite, Mineral Mills, Inc., has been established with headquarters and plant in Pittsburgh, Pa. The firm will supply magnetite to companies cleaning gravel, gypsum, and other minerals by the heavy media separation and washing process.

Mineral Mills has acquired the magnetite operations previously conducted by Orefraction, Inc., Pittsburgh.

H. ROBERT BAER has been appointed sales representative in the northeastern Ohio and northwestern Pennsylvania territory for Leschen Wire Rope Division, H. K. Porter Company, Inc., New York, N. Y. Mr. Baer will make his headquarters at Canfield, Ohio.



THIS Utah aggregate producer is assured of dependable power for every operation. Fourteen BROOK MOTORS power crushers, screens, feeders and conveyors. Brook Motors cost them less to install, are tailored to the job and assure lower maintenance costs. There is no finer motor made, as many sand and gravel, and crushed stone plants have found out. Send for catalog.

SINCE 1904

world's most respected motor

BROOK MOTOR CORPORATION

BROOK MOTOR CORPORATION

3553 WEST PETERSON AVE., CHICAGO 45, ILL.

In Canada: BROOK ELECTRIC MOTORS OF CANADA LTD.
250 University Ave., Toronto, Ontario

Factory Representatives, Warehouses, Dealers in Principal Cities.

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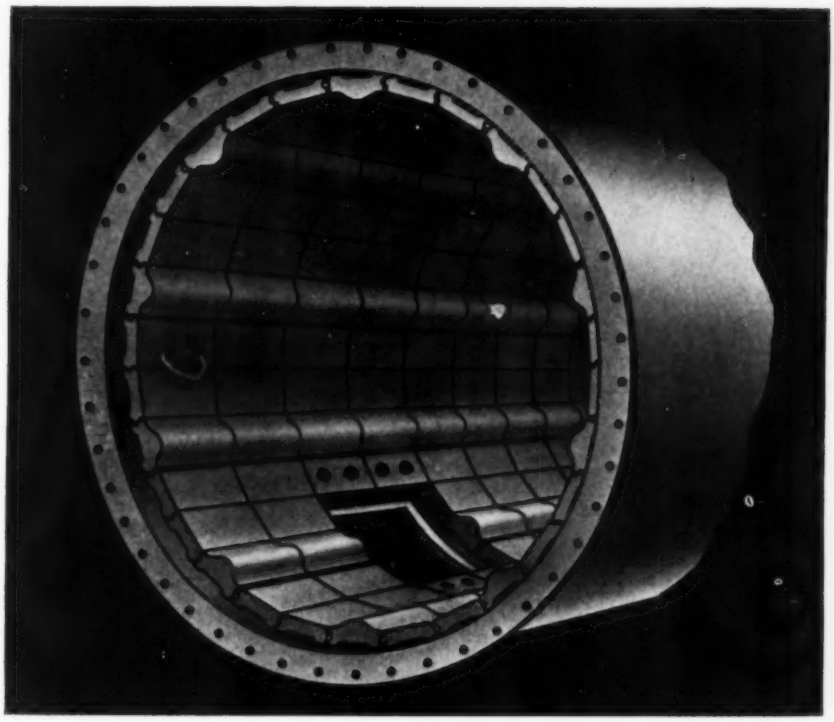

"You Can Reduce Grinding Costs and Improve Mill Performance with Long-Lasting B&W Universal Liner Plates

B&W Universal Liner Plates can reduce your cost per ton of material ground. They're easy to handle, store and install, wear longer and more evenly, and require less replacement."

Here's why:

1. **Lower Initial Costs.** Standardization eliminates chiller and pattern costs.
2. **Reduced Costs In Liner Inventory.** Standardization is possible because one design fits all diameters of mills. Standardization means quicker unloading and storage.
3. **Longer Life For Liners.** Better quality control on a mass production casting, utilizing permanent molds, results in uniform wear. Ideal size for uniform chill and heat-treatment.
4. **Reduced Costs In Determining Most Efficient Wear Patterns.** You can get wear profiles consisting of all lifter ribs or all flats from the same castings, as well as a combination of both including straight or spiralled lifter pattern.
5. **Longer Life For Different Applications.** This is assured by selection of proper materials. Design is suitable for either chilled irons or wear steels.
6. **Reduced Costs In Both Direct Labor and Outage.** Installation time is less because small size and weight of castings allows them to be handled easily, without cranes and with less fatigue for workers. Also, liners can be installed without turning the mill.
7. **Reduced Costs In Storage Space.** Because small castings stack easily, little storage space is required. One design of casting interchangeable for all size mills also simplifies records.
8. **Reduced Costs On Breakage Claims and Delays For Replacements.** Small castings are rugged and almost impossible to break by handling. Large castings of hard, brittle irons sometimes break in shipment.

Liners are supplied in two nominal thicknesses, 1½" and 3" with 1½" high lifters. Castings are 6" wide x 12" long. Positive seating of small castings on mill shell means less breakage of castings under operating conditions.

For additional information on B&W Universal Tube Mill Liner Plates, write The Babcock & Wilcox Company, Process Equipment Department, Barberton, Ohio.

5-478

BABCOCK & WILCOX

B&W

BOILER DIVISION

Transmit every pound of usable torque with J-M Friction Facings

Woven J-M Cone Facing being applied to a power take-off unit.

Heavy-equipment operators have discovered that Johns-Manville Friction Facings for clutches efficiently control the tremendous torque output of modern engines. These facings can withstand the searing clutch heats (as high as 1200 F) developed during power engagement . . . heats which can destroy friction ingredients and increase clutch slippage.

J-M Friction Facings, made of the finest asbestos fibers and resins, were specifically engineered for their job. They resist thermal breakdown . . . absorb and pass off sudden heat surges. They quickly bring drive shaft and power take-off units to fullest working torque, prevent loss of engine torque that robs your equipment of speed and power, makes your operation less profitable.

See your J-M Distributor or write Johns-Manville, Box 14, New York 16, N. Y. In Canada: Port Credit, Ont. Ask for Brochure FM 35-A.

JOHNS-MANVILLE

100 YEARS OF QUALITY PRODUCTS...1858...1958

JM PRODUCTS

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R. C. Meaders

Appointment of ROBERT C. MEADERS as assistant manager of the Mining, Crushing, and Process Machinery Division was announced by officials of the Nordberg Manufacturing Company, Milwaukee, Wis.

Simultaneous with this appointment, D. A. CHEYETTE, vice-president of the division, was named executive director, and JACK B. BOND was promoted to general manager.

Prior to joining Nordberg, Mr. Meaders managed the affairs of Aerofall Mills, Inc. His background also includes affiliations with the Carborundum Company, and Patino Mines & Enterprises Consolidated, Inc.

Retirement of CHARLES E. PHILLIPS, manager of the Wilkes-Barre district for 33 years and a company employee for 47 years, has been announced by Allis-Chalmers Industry Group, Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

With the retirement of Mr. Phillips, Allis-Chalmers discontinues its Wilkes-Barre office. All of the territory, with the exception of four northern counties, will be served by Allis - Chalmers' Allentown district. Two of these counties, Potter and Tioga, become part of the Buffalo district, and Susquehanna and Bradford counties revert to Allis-Chalmers' Syracuse district.

J. C. Corrigan Co., Inc., Boston, Mass., has named WILLIAM J. OHRENBERGER sales manager.

Mr. Ohrenberger will direct sales from the main office and plant of the Corrigan Company, which has sales offices in New York, Syracuse, Philadelphia, and Chicago.

EDWARD INGLE, 64, chief engineer of the Sturtevant Mill Company, Dorchester, Mass., died recently, at Lawrence General Hospital, Lawrence, Mass., after a long illness. Mr. Ingle, a Lowell Institute graduate, joined Sturtevant in 1920. He became chief engineer in 1957.

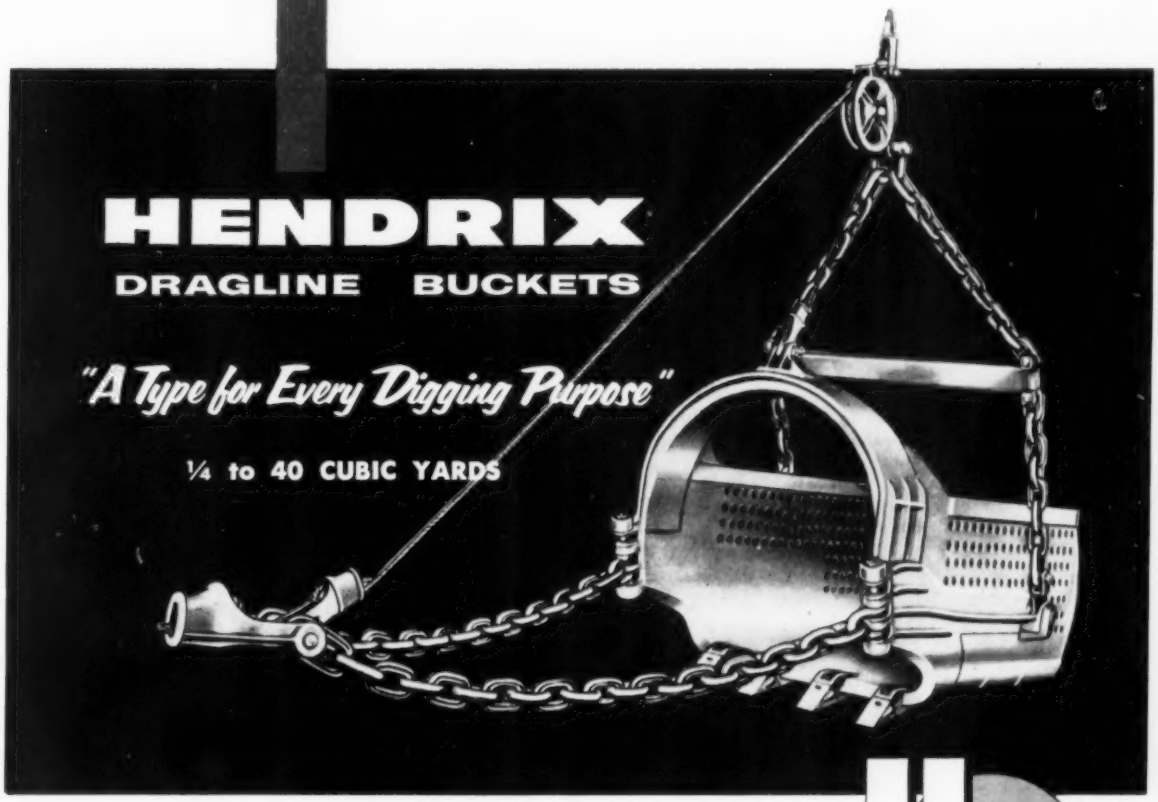
check these HENDRIX features...

BONUS LOADS

LESS MAINTENANCE

EXTRA PROFITS

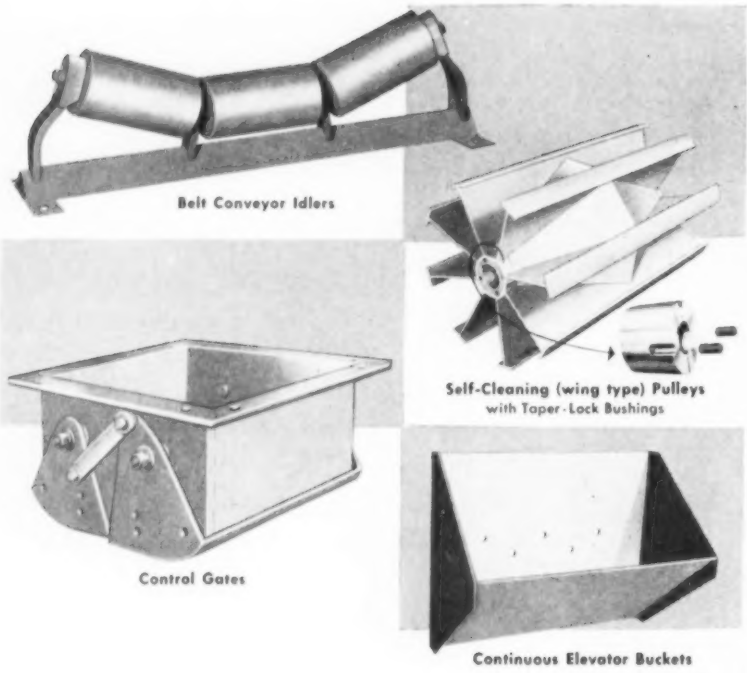
- ✓ LESS BUCKET WEIGHT, for greater capacity.
- ✓ ALL-WELDED CONSTRUCTION for greater strength and durability.
- ✓ 14% MANGANESE STEEL chains, fittings and reversible tooth points.
- ✓ PERFECT PERFORMANCE . . . easier handling . . . faster loading . . . cleaner, smoother dumping.



All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

Hendrix Lightweight Dragline Buckets



MARCO Ideas in Materials Handling Accessories

HELP INCREASE PRODUCTION AND LOWER YOUR COSTS

MARCO specializes in designing and manufacturing a complete line of modern accessories used in materials handling. The creative and sound engineering principles incorporated in MARCO equipment can help you gain greater efficiency of operation.

Belt Conveyor Idlers: MARCO equips each idler with precision ground ball bearings designed specifically to give greater load capacity, added years of idler service life and lower power requirements. Proof! At 300 revolutions per minute these anti-friction bearings will carry loads up to 860 lbs. per bearing.

Each bearing is pre-lubricated at the factory, then effectively sealed to eliminate field lubrication and reduce your maintenance costs.

Idlers fit any conveyor frame and are available in many types and sizes.

Conveyor and Elevator Pulleys: MARCO self-cleaning and solid steel pulleys offer outstanding advantages of machined faces and Taper-Lock bushings at a competitive price. Machined faces insure against pulleys being 'out-of-round', thereby increasing service-life of belt and pulleys. Taper-Lock bushings save time and trouble when mounting or demounting pulley. The MARCO line of pulleys is complete ...and delivery is prompt.

Control Gates: MARCO gates are engineered for easy installation and fast, smooth operation. Gates are operated by a positive linkage, instead of outmoded gears that wear out or become mis-aligned. Made of all steel construction and oversize wearing parts, these gates deliver maximum service under severe operating conditions. Available in 4 types and many sizes.

Continuous Elevator Buckets: Designed of two-piece construction and dieformed to insure uniformity. Continuous welds prevent leakage and give buckets added strength. Can be furnished with holes punched to standard punching diagrams or to suit your existing bolt patterns. MARCO makes the size and type elevator bucket to meet your exact requirements.

Compare and you'll see why materials handling accessories engineered by MARCO offer you more for your dollar. Get the complete facts from your MARCO distributor or contact E. F. Marsh Engineering Co., St. Louis 10, Mo.

MARCO®

engineered MARCO products:

Tubular Frame Belt Conveyors—Conveyor Idlers—
Solid Steel and Self-Cleaning Steel Pulleys—
Bucket Elevators—Control Gates—Feeders—Bins.

Enter 148 on card, page 105

Formation of Koehring Finance Corporation, a wholly-owned subsidiary of the Koehring Company, Milwaukee, Wis., has been announced by Julien R. Steelman, president of the parent company.

According to Mr. Steelman, sales growth has resulted in a broader participation in equipment financing by Koehring. The average balance of deferred payments in the first six months of 1958 was about $4,000,000, or nine times the level of five years ago.

Officers of the new subsidiary are Julien R. Steelman, president; Orville R. Mertz, vice-president—finance; Vincent R. Peterson, secretary; and Peter P. Graser, treasurer.

JOHN J. SHEEHAN has been appointed general manager of the International Division of Hewitt-Robins, Inc., Stamford, Conn. Mr. Sheehan succeeds Harold Von Thaden, who is retiring after 35 years of service with the company but has been retained as a consultant.

In his new position Mr. Sheehan will be responsible for all of the company's international activities, consisting of an export department in New York City and subsidiaries and affiliates in Canada, Great Britain, Holland, France, and South Africa.

MALCOLM P. PARKER has been appointed sales representative for Leschen Wire Rope Division, H. K. Porter Company, Inc., New York, N. Y. His territory will cover North Carolina, South Carolina, and northern Georgia.

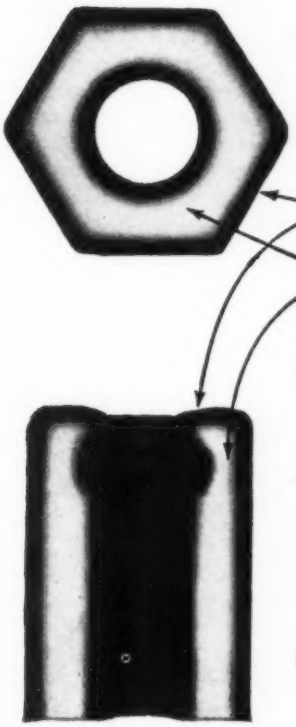
A Truck Sales Processing Center that offers improved customer and dealer service through fast delivery and modification of International heavy-duty truck models has been opened at Fort Wayne, Ind., by the International Harvester Company, Chicago, Ill.

The center, a modern flat-roof building covering 211,088 sq. ft., has two main sections with storage capacity for more than 800 trucks.

Manager of the center is L. A. WEINMANN, formerly assistant manager of the Fort Wayne motor truck sales district.

GARDNER-DENVER DRILL STEEL

Cuts drilling costs...reduces steel breakage



Made like tough rock drill parts

Gardner-Denver sectional drill steel is carburized to produce the same hard case, soft core structure that produces superior rock drill parts. Shot-peening increases fatigue resistance.

High-tensile surface strength resists abrasion, corrosion, nicking and down-the-hole gaff.

Tough, soft core provides compressive strength to withstand shock loads without breaking.

Made from quality steel

Gardner-Denver uses special alloy steels to insure uniform hardening and longer service life.

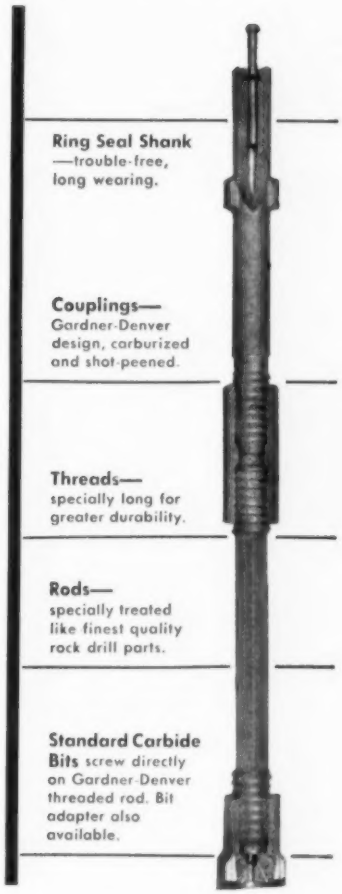
Threads and couplings designed for the job

The extra long threads and couplings of Gardner-Denver design provide greater strength and durability. Couplings are also carburized to provide a hard surface on the threads and a tough core.

Proved on the job

One user drilling hard rhyolite reports steel breakage reduced by 45% after changing over to Gardner-Denver drill steel.

Drill steel represents a large percentage of drilling costs. Gardner-Denver drill steel costs less to use. Write for information.


Ring Seal Shank —trouble-free, long wearing.
Couplings— Gardner-Denver design, carburized and shot-peened.
Threads— specially long for greater durability.
Rods— specially treated like finest quality rock drill parts.
Standard Carbide Bits screw directly on Gardner-Denver threaded rod. Bit adapter also available.

Gardner-Denver Sectional Drill Rod Specifications

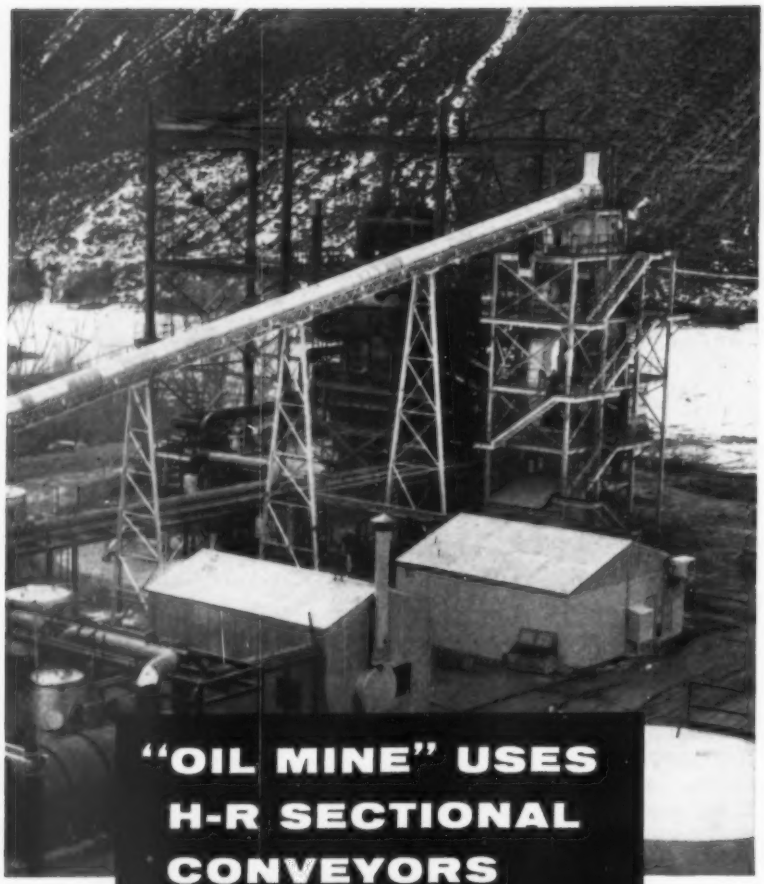
	CL5-200 Series	CL5-400 Series	CL5-600 Series	CL5-700 Series	CL5-1000 Series
Thread Size	1 1/16"	1 1/4"	1 1/2"	1 3/4"	2 1/2"
Recommended Drill Size	3" and smaller	4" and smaller	4" and 4 1/2"	4" and 4 1/2"	5 1/2"
Recommended Bit Size	1 3/8" to 1 7/8"	2" to 2 1/4"	2 3/8" to 2 3/4"	3" to 4"	4", 4 1/2" and 5"
Rod Sizes	7/8" Hex.	1" Hex.	1 1/4" Hex.	1 1/4" and 1 1/2" Hex.	1 7/8" Hex.
Rod Lengths	2' to 20'	2' to 20'	2' to 20'	2' to 20'	4' to 20'
Coupling Diameter	1 7/16"	1 3/4"	2 1/8"	2 1/2"	3 1/8"
Ring Seal Shank	1" Hex. Collared 1 1/4" Rd. Lugged	1 1/4" Rd. Lugged 1 1/2" Rd. Lugged	1 1/4" Rd. Lugged 1 1/2" Rd. Lugged	1 1/2" Round	2 1/2" Round

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

Enter 149 on card, page 105



Oil carried by belt conveyors is one unique aspect of this experimental oil processing plant built in Colorado for the Union Oil Company of California by Stearns-Roger Manufacturing Company of Denver. Hewitt-Robins sectional belt conveyors are used to carry oil-bearing shale through crushing, screening, storage, and final extraction in an operation which may unlock reserves of a trillion barrels of oil. Because of standard design and interchangeable components, these H-R factory-built sectional conveyors are easily lengthened or relocated to give flexibility to the system.

These pre-engineered conveyors are designed to handle bulk materials from wood chips to lead ore at capacities up to 1000 TPH and speeds as high as 650 FPM. They are easily assembled in the field by your own men.

For information or service, contact your local H-R representative or Hewitt-Robins, Stamford, Conn.

HR HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS . . . POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE . . . VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

H-R Product Manufacturing Plants in Buffalo, N. Y. • Chicago, Ill. • King of Prussia, Pa. • Passaic, N. J. Amsterdam, Holland • Johannesburg, South Africa • London, England • Montreal, Canada • Paris, France

Enter 150 on card, page 105

Plans for combining Mayhew Machine Company, Inc., and Mayhew Supply Company, Inc., both of Dallas, Tex., with the Gardner-Denver Company, Quincy, Ill., were announced.

Mayhew Machine produces seismograph and geophysical drilling equipment. Mayhew Supply is the sales organization that markets these products.

The proposed acquisitions, involving in excess of $5,000,000, will be effective about mid-December.

Executives of Mayhew will continue to head the Mayhew operations. Mayhew will be represented on the Gardner-Denver board of directors.

Mayhew's sales and service offices in Dallas, Houston, and Lubbock, Tex.; Tulsa, Okla.; Casper, Wyo.; Grand Junction, Colo.; Sidney, Mont.; and Miami, Fla., will be maintained. In addition, Gardner-Denver's more than 50 sales offices will offer the drilling rigs and rotary equipment for the oil, mining, and construction industries.

P. H. WOODARD of the Bailey Meter Company, Cleveland, Ohio, has been appointed resident engineer in Omaha, Nebr., a subdivision of the firm's Kansas City district.

Mr. Woodard, who joined the company in 1951, has been on the Kansas City staff since 1953.

P. H. Woodard

J. G. Jackson

JAMES G. JACKSON has been appointed sales manager of the St. Louis branch of the Chase Bag Company, New York, N. Y. Mr. Jackson has been with Chase Bag for 10 years as a sales representative in the St. Louis area.

The sales territory served by the St. Louis branch includes portions of Missouri, Iowa, Illinois, Indiana, Kentucky, Tennessee, and Arkansas.

Everybody profits ...because

you belong

in this picture!

The publisher of this magazine is often asked what kind of a man you are . . . and how many like you are receiving his magazine.

Why is he asked?

Because the *advertisers* (whose money is his chief income) insist upon knowing the types of people (by industry or profession, by title) for whom the magazine is edited — and how many are getting it.

In order to standardize on the presentation of such information to advertisers and to have its accuracy vouched for by a disinterested third party, nearly 450 publishers have joined some 200 leading advertisers and advertising agencies in a non-profit organization called Business Publications Audit.

The purpose of BPA is to assure advertisers . . . by frequently checking and rechecking . . . that each member publisher is indeed distributing his magazine, in the *numbers* promised, to the *types* of men he promised would receive it.

The BPA symbol in this magazine means that *you belong* . . . that because of your occupational interests you are qualified, in the eyes of the advertisers, to receive it.

The advertiser can thus tell whether he's getting his money's worth.

The publisher has a better sales story to prospective advertisers because his magazine is "audited."

And you, the reader, get more value from the magazine because both the advertisers and editors, knowing what your special occupation is and what your interests are, are better able to prepare advertising and editorial material that will be most informative and useful to you.

What you can do

Publishers and advertisers frequently write to magazine readers to learn what kind of articles and advertisements appeal most. Cooperate with them — will you? — by answering their questions . . . in the interest of better communications between makers and markets.

BUSINESS PUBLICATIONS AUDIT OF CIRCULATION, INC.

420 Lexington Avenue New York 17, N. Y.

BPA

A NON-PROFIT, TRIPARTITE MEMBERSHIP CORPORATION OF ADVERTISERS, ADVERTISING AGENCIES AND BUSINESS PUBLICATIONS

A complete line of welding carbon products is now being sold by the Arcair Company, Lancaster, Ohio, through its retail sales outlets. Arcair manufactures and distributes metal torches and special cutting and gouging electrodes used with the torch. Until recently these two lines were sole products handled by the organization.

The welding carbon products line includes a. c. welding electrodes, carbon plates, carbon rods, and carbon paste.

RENE D. WASSERMAN, president of Eutectic Welding Alloys Corporation, Flushing, N. Y., has been appointed welding industry chairman of the United States Committee for the United Nations.

The United States Committee for the United Nations is a non-partisan committee of national organizations which undertakes the public relations task of disseminating information and facts about the United Nations, and also works to promote the observance of UN Day in the United States.

J. B. NORDHOLT JR., president, Webster Manufacturing, Inc., Tiffin, Ohio, was elected president of the Conveyor Equipment Manufacturers Association at the society's 25th annual meeting at the Greenbrier, White Sulphur Springs, W. Va., October 21.

E. H. WOODBERRY, manager, Industrial Division, Lamson Corporation, Syracuse, N. Y., was elected vice-president; L. J. JOHNSON, general sales manager, Mathews Conveyor Company, Ellwood City, Pa., was elected treasurer; and E. E. SAPERSTON, secretary and comptroller, Mechanical Handling Systems Inc., Detroit, was elected secretary.

Directors for the new year are O. A. JOHNSON, president, Gifford-Wood Company, Hudson, N. Y.; H. A. BARBER, president, Barber-Greene Company, Aurora, Ill.; and E. P. BERG, general manager, Pershing Road Plant, Link-Belt Company, Chicago.

R. C. SOLLENBERGER was re-elected executive vice-president to head staff operations at Washington, D. C.

HOWARD FREYENSEE has been appointed manager of sales, large excavators, by the Bucyrus-Erie Company, South Milwaukee, Wis. He succeeds L. C. BLACK, who recently was named manager of domestic sales.

Mr. Freyensee formerly was sales development manager, commercial cranes and excavators. He joined the company in 1946 as a sales apprentice and later served as a sales representative attached to the Chicago and Atlanta offices.

H. Freyensee

L. E. Nelson

As a further expansion of its sales organization, the Marine and Industrial Engine Division of the Chrysler Corporation, Detroit, Mich., has named LAWRENCE E. NELSON vice-president, sales. Mr. Nelson was formerly with Chrysler Motors Corporation, Chrysler Corporation, as director—marketing staff, and more recently as director —vehicle sales.

C. C. WILLIAMS, who previously held that position, has been appointed divisional vice-president.

G. L. SITTSER has been unanimously elected by the board of directors of Bay City Shovels, Inc., Bay City, Mich., as executive vice-president of that firm. Mr. Sittser brings to his new post a wealth of experience in both the automotive and industrial fields, having been associated in an executive capacity with several nationally known manufacturers.

A new enlarged plant to increase production of pumps and mining equipment has been opened by the Gardner-Denver Company in Johannesburg, South Africa, according to Gifford V. Leece, president. The plant is the eleventh production facility of the company that has its headquarters at Quincy, Ill.

Write for complete details

FORGED*
(NOT A CASTING)

This is IT! . . . the new forged and heat treated alloy steel drop ball, forged from "Cape AnAlloy"*. Now available after three years of development, this "Cape Ann" product outwears all competition — assures maximum economy in use.

SONIC TESTED • FIELD TESTED

CAPE ANN ANCHOR & FORGE CO.
P.O. Box 360 • Gloucester, Mass.

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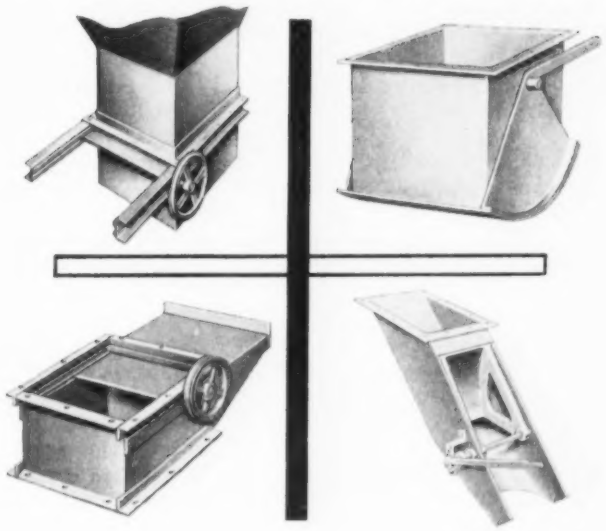
Engineered GATES FOR EVERY INDUSTRY

EHRSAM

Ehrsam offers a complete selection of engineered gates for all industry. Regardless of what type of material is handled, these rugged and dependable gates will insure a controlled discharge. Ehrsam gates will provide efficiency, dependability and durability; the answer to your bulk handling problems. All styles and models are compact, easy to install and operate and require minimum maintenance, thereby reducing operating time and cost.

Why not write today for your copy of the new Ehrsam Gate Catalog No. 7A?



The J. B. Ehrsam & Sons Mfg. Co.

Enterprise, Kansas

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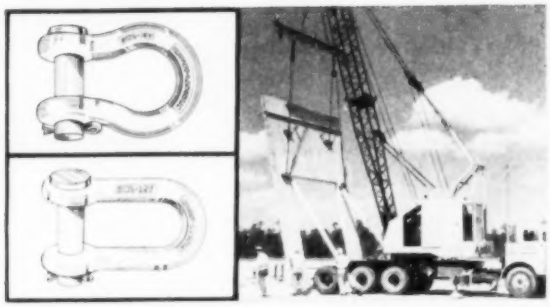
*Load-Rated** DOES THE JOB!



Handling Tilt-Up Panels With Crosby-Laughlin *Load-Rated* Shackles

Crosby-Laughlin* LOAD RATED Shackles are demanded on jobs where safety is essential! "Takes the guesswork out of buying fittings" say users of the LOAD-RATED Line. Quality steel is drop forged—heat treated for toughness. *Order capacity* for the job—*see* guaranteed capacity stamped on LOAD-RATED Fittings! Safety is no accident when you order from the *world's most complete line* of drop forged fittings for wire rope and chain. Sold by construction, industrial and mill supply distributors. Ask for free catalog.

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CROSBY-LAUGHLIN *Division*

AMERICAN HOIST & DERRICK COMPANY

FT. WAYNE, INDIANA

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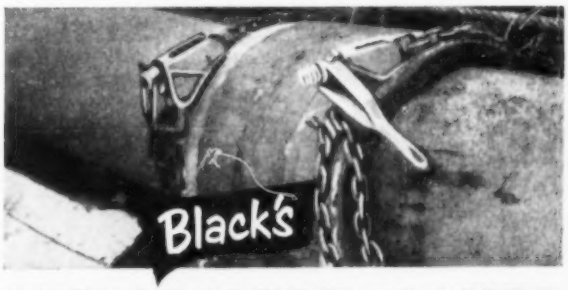
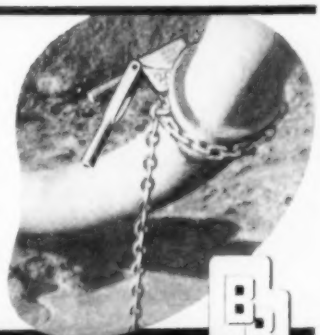


DREDGE SLEEVE CLAMPS

Sturdy • Practical • Dependable • Economical

Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U.S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply... positive in action. Write for illustrated folder, today.



THE BLACK BROTHERS CO., INC.

9th Ave. at 4th, Mendota, Illinois

Enter 153-C on card, page 105

WEMCO, San Francisco, Calif., Division of Western Machinery Company, has named the Cramer Machinery Company, Portland, Oreg., a distributor for its aggregate equipment in the state of Oregon and southern Washington.

The R. L. Harrison Company, Inc., Albuquerque, N. M., will distribute WEMCO'S line of aggregate equipment in New Mexico.

Western Machinery Company Industrial Sales Division offices in Phoenix, Salt Lake City, Denver, and Spokane have been appointed to distribute WEMCO products. The Phoenix office will cover Arizona; Colorado will be served from the Denver office; the Salt Lake City branch will distribute WEMCO equipment to Eastern Nevada, Utah, and Southern Idaho; the Spokane office will serve as distributor for western Montana, eastern Washington, and northern Idaho.

S. J. TWYMAN, 58, sales engineer for Eagle Iron Works, Des Moines, Iowa, died following a heart attack.

CHARLES D. BOBBITT has been appointed sales promotion manager for the Trojan tractor shovel line manufactured by The Yale & Towne Manufacturing Company at its Batavia, N. Y., and San Leandro, Calif., plants.

Mr. Bobbitt joins the Trojan Division of Yale & Towne after having served the Clark Equipment Company as product distribution manager of its Construction Machinery Division for the last five years. Prior to that he served in the same capacity for the Frank G. Hough Company for seven years.

Chain Belt Company, Milwaukee, Wis., announces the opening of its new district sales office and warehouse at 10488 Chester Rd. in Cincinnati. The warehouse will provide modern warehousing facilities and services to meet the demands of the Ohio, Kentucky, and Indiana region.

The new facilities will be headed by CHARLES C. PINGRY, Chain Belt's district sales and warehouse manager.

LOUIS G. HELMICK JR., executive vice-president of Joy Manufacturing Company, Pittsburgh, Pa., has been elected a director of the company.

Mr. Helmick, who joined Joy in 1947, was elected executive vice-president in June, 1958. Prior to that time, he had served as vice-president and general manager of Joy's Industrial Division.

The Fuller Company, Catasauqua, Pa., has established a New York district office at 380 Madison Ave., to service the New York metropolitan area. In charge of the new office is ANDREW VAN DER LYN, who brings to the company an extensive background in industrial sales engineering on materials handling.

Mr. van der Lyn was associated with the Pangborn Corporation from 1951 to 1956 as New York district sales engineer, and was more recently engaged in the sale and application of equipment of the Day Company, Minneapolis, and the Pittsburgh Lectrodryer Division of McGraw Edison Company. He recently joined Fuller to establish and manage the New York district office.

A. van der Lyn

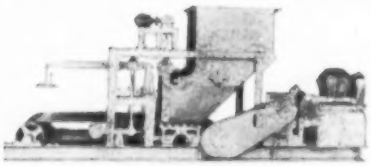
H. M. Richey

At a recent meeting of the directors of The Timken Roller Bearing Company, Canton, Ohio, HERCHEL M. RICHEY was elected vice-president in charge of manufacturing, Roller Bearing and Rock Bit Division. Mr. Richey succeeds A. M. DONZE who retired, but remains as a member of the board of directors.

Mr. Richey joined Timken in 1916 as a tool maker. He served successively as foreman, assistant general superintendent, general superintendent, assistant factory manager, factory manager, Bearing and Rock Bit Divisions, and in 1954 he was appointed general factory manager, the post he held at the time of his election as a vice-president.

THE SUMMIT OF SCALING EFFICIENCY

Fast
Accurate



Automatic
Economical

Schaffer **POIDOMETER**

OVER 1500 now serving Industry

For sheer versatility, this machine is held in highest esteem by experienced bulk material processors.

It's the high-speed SCHAFFER Poidometer—source of *reliable* data at every scaling phase, including weighing, blending, feeding, mixing, recording and proportioning.

These modern units are designed and built for sustained service anytime, anywhere. Easy to install and simple to operate, they help to maintain maximum output from your equipment.

Available with remote control devices for showing and changing feed rate, and with total weight recorders.

Write for CATALOG No. 5

SCHAFFER POIDOMETER CO., 2828 Smallman St., Pittsburgh 22, Pa.

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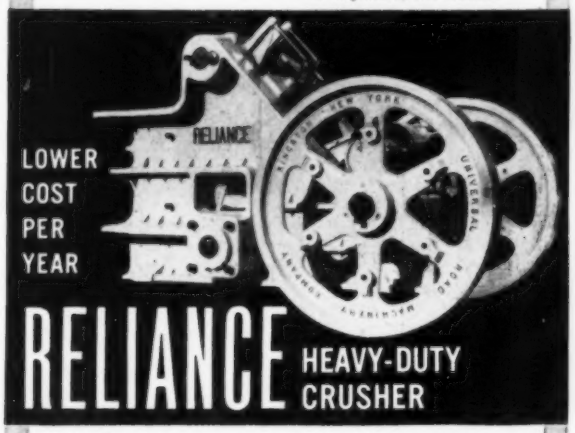
LEVER-TYPE JAW CRUSHER STILL IN USE AFTER 36 YEARS

—at Keystone, So. Dakota



RELIANCE HEAVY-DUTY CRUSHER

- Heavier, stable—you save money on upkeep.
- Minimum abrasion — outlasts other designs 3 to 1.
- Long jaw plates — adjustable for fineness.
- Crushing, screening and washing plants—50 to 1,500 tons-per-day capacity — engineered to your needs.

Booklet on request, pictures installations.

UNIVERSAL ROAD MACHINERY CO.

Main office and factory: Kingston, N. Y.
New York City office: 117 Liberty St.

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DIAPHRAGM (O.D.S.) SLURRY PUMPS

No linkage—No leakage

Diaphragm is actuated by compressed air, vacuum, or combination of both, controlled by 3-way solenoid valve. Handles slurries with up to 85% solids; pressures up to 100 PSI. Available with diaphragm, ball check valves and lining of "Hypalon." 6 sizes—flows from 1 to 90 gpm.

DORR-OLIVER INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
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TWO E16 TOURNAROCKERS

16 TON CAPACITY
C-11 PULL
150 H.P. Diesel

one without tires . . .

EXCELLENT Mechanical Condition

A real BUY at $7500 for BOTH

RUPP EQUIPMENT CORP.

85 GREAT ARROW AVE., BUFFALO 16, N. Y.
Write for full information or telephone
Buffalo — Victoria 5544 or Rochester — FAirview 8-8840

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80% fewer pieces

in this Plibrico cooler arch nose

. . . . and wherever installed Plibrico linings are equally simple

Simplicity . . . that's the key to the durability of a Plibrico lining. That's why it's so easy to repair when needed, too. Think it over: the more complex you make anything, the greater are the possibilities of failure and the more difficult it is to repair. Plibrico lining simplicity shows itself in the clinker cooler arch nose illustrated. Here's how this Plicast formed area compares to ordinary tile construction:

Plibrico Lining	Ordinary Lining
6 pieces, steel	9 pieces, steel
10 anchors	18 support castings
1 piece refractory	58 pieces, tile
17 pieces . . . TOTAL . . .	85 pieces

Simplicity applies to all Plibrico linings. See how you can benefit from Plibrico construction by writing today for our catalog covering linings for calcining, drying, and processing furnaces.

Plibrico REFRACTORIES ENGINEERING CONSTRUCTION

PLIBRICO COMPANY • CHICAGO 14, ILL.
Plibrico Sales & Service in Principal Cities

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As a result of the recent sales reorganization at the Construction Machinery Division of Clark Equipment Company, additional key personnel have been given new assignments.

P. McAdams

In the latest changes, B. FRANK REACH JR., formerly a district sales representative in the Central District, now assumes the position of manager of the district. Mr. Reach's territory includes Michigan, Ohio, Kentucky, Indiana, Missouri, Illinois, Wisconsin, North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas and central Canada. Before joining Clark in 1953, Mr. Reach was a sales representative for The Frank G. Hough Co.

PAUL MCADAMS, formerly development engineer, takes on the duties of chief engineer in the Construction Machinery Division's engineering department.

EDGAR F. WENDT, for the last 29 years president of the Buffalo Forge Company, Buffalo, N. Y., has retired after 47 years with the company. He will continue as a director.

CLAYTON F. ENGLISH, executive vice-president of Sturtevant Mill Company, Dorchester, Mass., has been named treasurer. Mr. English will continue to serve as vice-president.

Mr. English succeeds JOSEPH L. STURTEVANT, who died recently after a long illness. Mr. Sturtevant, 84, was former president and chairman of the board of Sturtevant.

JAMES M. MILES has been named manager of the Springville, Utah, industrial explosives manufacturing plant of American Cyanamid Company, New York, N. Y.

Mr. Miles has been with Cyanamid since 1937 when he joined the company's explosives plant in New Castle, Pa., as a chemist. Since 1954 he has been assistant plant manager at New Castle.

Worthington Corporation, Harrison, N. J., announces the appointment of two new distributors to handle its construction equipment in the states of Illinois and Indiana. The distributors are R. G. Smith Equipment Co., Inc., Des Plaines, Ill., and Heil-Chicago, Inc., McCook, Ill.

Both distributors will cover the counties of Lake, McHenry, DeKalb, Kane, Cook, DuPage, Kendall, Will, Grundy, and Kankakee in Illinois, and the counties of Lake and Porter in Indiana.

In addition to the announced enlargement of facilities at its Ottawa, Ill., works, the Refractories Division, H. K. Porter Company, Inc., Pittsburgh, Pa., will operate a Chicago warehouse to service the Chicago-Gary area. The warehouse will have a large stock of refractory brick, mortars, castables, plastics, and ramming mixes for all types of industrial furnace construction and repair needs.

A. M. LIESER, CHARLES SINGLETON, and CHESTER J. SIMMONS will be added to the Chicago sales staff as sales representatives.

ROBERT F. HELLER, partner and co-founder of Beaumont, Heller & Sperling, Inc., Reading, Pa., died on October 14.

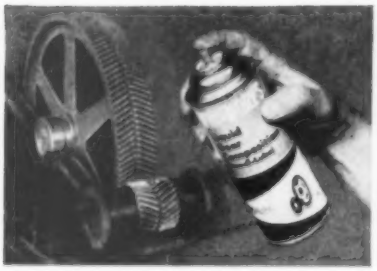
Franchises on the Crab tractor, manufactured by Napco Industries, Inc., Minneapolis, Minn., have been granted to the following dealers:

Western Machinery Co., Phoenix, Ariz.; Smith Booth Usher Co., Los Angeles, Calif.; Western Machinery Co., Denver, Colo.; Casey & Emmert, Inc., Chicago, Ill.; Embry Brothers, Inc., Louisville, Ky.; Files & O'Keefe Co., Portland, Maine; Construction Equipment Co., Detroit, Mich.; F. W. Domres Equipment Co., Manistee, Mich.; Machinery & Supplies Co., Kansas City, Mo.

Ace Equipment Co., Maywood, N. J.; Dravo-Doyle Co., Pittsburgh, Pa.; Western Machinery Sales Co., Sale Lake City, Utah; Porter Supply Co., Inc., Huntington, W. Va.; Best Equipment Co., Milwaukee, Wis.; Cartierville Machinery Co., Montreal, Que.; International Agencies & Machinery Co., Vancouver, B. C.

TRIAL SAMPLES

Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!



HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

• Open Gears, Dipper Sticks, Cams • Enclosed Gear Cases • Wire Rope and Cable
• Hydraulic Units, Torque Converters • Roller, Ball, and Sleeve Bearings • Speed Reducers

Est. 1893

THE WHITMORE MANUFACTURING CO.

LUBRICATING ENGINEERS

CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

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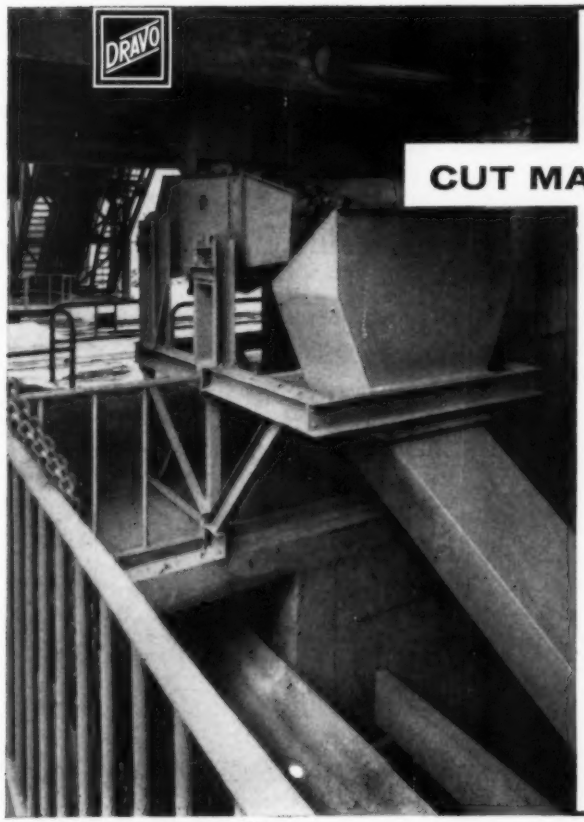

Dravo-Schenck Vibro-Feeders CUT MATERIALS HANDLING COSTS

Because it is built to stand up under the kind of punishment that hot, abrasive or other hard-to-handle materials deal out, Dravo-Schenck vibro equipment keeps maintenance costs way down. All wearing parts are ruggedly constructed, and the unique "Micro-Thrust" exciter unit helps reduce wear by moving material with minimum contact with troughs or screens.

Cost-cutting, heavy-duty Dravo-Schenck screens, conveyors and feeders are at work in a wide variety of applications—handling such difficult materials as ferrous and non-ferrous ores, sinter, cement clinker, crushed stone, chemicals and coal.

Our engineers will gladly work with you on specific problems. For information, write for Bulletin No. 1475, Dravo Corporation, Pittsburgh 22, Penna.

DRAVO
CORPORATION

Freely oscillating vibro-feeder, 3 x 7 ft, for 200 tph of iron ore. This type of heavy-duty feeder is available with capacities in excess of 800 tph.

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Every issue of PIT AND QUARRY is full of information you can use in your business. It gives you ideas on every phase of your operations.

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My Name.....

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America has homework to do!

THERE'S PROBABLY a lot about your town that makes you want to brag a bit about it.

But there's one thing you *can't* be proud of. And it's a shame you share with just about every other community in America.

The homes where far too many people live are a disgrace. Slums, semi-slums, housing blight are with you. Fixing them up is the homework to be done.

If your town is like most in the U. S., here's what the figures show: 1 out of every 10 homes are rock-bottom slums. Nearly one-half urgently need basic repairs.

But slums are something that is happening on the other side of town, you may say. The problem isn't mine.

Slums are YOUR homework

Distance is no barrier against the threat and cost of housing blight.

Your taxes go up because it takes more money for your town to fight the diseases and delinquency and poverty spawned in the slums. The security of your family goes down because the slum is the natural parent of crime.

Where your business comes in

Every firm has a responsibility toward the town where it's located. Part of it is to support community improvements as any other good citizen would.

Some slums are beyond repair. They must be torn down and a fresh start made. Others can be made to conform to accepted living standards. So it is up to you to get behind every sound program which seeks to provide adequate housing for all our people.

Civic and individual groups must have business backing . . . *your* firm's backing if they are to succeed.

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10"x36" Ditto
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A full line of accessories available, including carrying and return belt covers.

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Foot
14"	25'	$1397	$ 722	
14"	50'	2222	1144	$16.84
14"	85'	3377	1733	
16"	20'	1262	636	
16"	45'	2137	1088	18.04
16"	60'	2682	1359	
16"	90'	3712	1900	
18"	25'	1477	794	
18"	45'	2217	1166	
18"	70'	3142	1648	19.24
18"	85'	3697	1933	
18"	100'	4252	2220	
18"	130'	5362	2797	
20"	25'	1517	828	
20"	60'	2882	1533	20.37
20"	75'	3467	1838	
20"	90'	4052	2145	
24"	25'	1590	898	
24"	45'	2430	1330	
24"	70'	3480	1875	21.78
24"	100'	4740	2514	
24"	120'	5580	2950	
24"	150'	6840	3603	
30"	50'	2911	1617	
30"	70'	3871	2119	24.75
30"	90'	4831	2614	
36"	25'	1818	1118	
36"	45'	2858	1678	27.95
36"	60'	3638	2096	
36"	100'	5718	3214	

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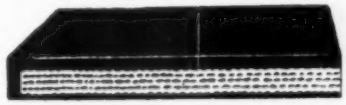

Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile. Heavy Duty 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

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14"	4	$3.63	$2.63
16"	4	4.08	2.77
18"	4	4.51	3.06
20"	4	4.97	3.54
24"	4	5.85	3.97
30"	4	7.18	4.85
36"	4	8.51	5.76

Major Bee Brand: 18# to 19# Average Friction Pull, 2500# to 3000# Average Cover Tensile. Skim coat between plies.
A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

Width	Ply	List Price Per Ft.	Sale Price Per Ft.
14"	4	$4.31	$2.85
16"	4	4.85	3.22
18"	4	5.39	3.57
20"	4	5.90	4.07
24"	4	6.94	4.60
30"	4	8.53	5.66
36"	4	10.09	6.84
24"	5	8.14	5.38

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Model No.	Bucket Size Inches	First 20' (Discharge Ht.)	Add or Deduct Per Ft.
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C53A	5 x 3¾	$1071.50	$20.25
C64A	6 x 4	1088.50	21.00
C85A	8 x 5	1235.00	25.50
C106A	10 x 6	1281.00	27.50
C127A	12 x 7	1510.00	31.25
C148A	14 x 8	1673.50	36.00
Style "A" Spaced Malleable Buckets on Belt			
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B64A	6 x 4	1116.50	21.25
B85A	8 x 5	1311.50	27.25
B106A	10 x 6	1692.50	33.00
B127A	12 x 7	1854.50	37.25
Style "E" Continuous Steel Buckets on Chain			
C85E	8 x 5 x 7¾	$1397.00	$31.25
C126E	12 x 6 x 11¾	1589.00	34.25
C108E	10 x 8 x 11⅝	1604.00	34.75
C128E	12 x 8 x 11⅝	1624.00	35.50
C148E	14 x 8 x 11⅝	1710.00	36.75
Style "E" Continuous Steel Buckets on Belt			
B85E	8 x 5 x 7¾	$1727.50	$34.50
B116E	11 x 6 x 8¾	1839.50	38.75
B128E	12 x 8 x 11⅝	2013.00	43.50

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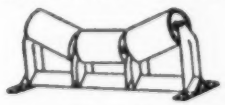
SAVE 25% AND MORE



3-roll, 5" diameter Troughing Idlers for:			
14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50
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14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with replaceable pre-lubricated sealed ball bearings. Maintenance is negligible. **WRITE FOR BULLETIN #1138.**

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1—Traylor 11' x 155' Rotary Kiln, 2 tires, welded, 1" shell.
1—Vulcan 8' x 125' Rotary Kiln, 2 tires, ¾" shell.
2—Vulcan 8' x 50' Rotary Kilns, 2 tires, welded, 1" shell.
2—Vulcan 6' x 60' Rotary Kilns, 2 tires, ¾" shell.
1—Traylor 5' x 50' Rotary Dryer, 2 tires, welded.
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1—4' x 25' Rotary Dryer, 2 tires, ⅜" shell.
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5—Mikro Pulverizers, 4TH, 3TH, 2TH.
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Steel Buildings; 20 ton Overhead Cranes; Bemis 50# Bag Packer with Sewing Machine; Bucket Elevators 65 to 125 ft. High; Redler Conveyors 5" and 10"; Screw Conveyors 6" and 9", etc.

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Lorain	"TL-20"	½ yd. Trench Hoe, Crane, or Shovel.
P&H	"105"	½ yd. Trench Hoe, mounted Zelligson Carrier.
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Terratrac	"500"	**Used** Crawler Tractor-Shovel, hyd. controlled.
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HEAVY MEDIA PLANTS: One semi-portable, bolted construction, 30 TPH, complete with Densifier, Pumps, Magnetic Separators, Rectifier, Controls, etc. Condition guaranteed, new 1956. One same as above 120 tons per hour with 12 ft. Cone.
CONCRETE BATCHING PLANT: 4 cu. yd. Batch. 300 ton, 4 compartment bin, 1000 bbl. cement Bin, two 84-S Tilting Mixers, Conveyors, Scales, Screws, etc.
BLAST HOLE DRILLS: Bucyrus Erie 42-T, diesel and one electric, with hydraulic jacks.
PULVERIZERS: Two Allis Chalmers 8′ x 12′ Rod Mills with 350 H.P., 3 phase, 60 cycle 2200 volt motors and control equipment. One 5′ x 22′ and one 6′ x 22′ Tube Mills with motors and drives.
AIR SEPARATORS: 5 ft., 10 ft., and 14 ft.
DENSIFIER: One New Wemco Simplex 48″ x 27′3″, double pitch, with flared tank, motor and drive. **NEW, UNUSED.**
COMPLETE PULVERIZING PLANT with drying, air separating, dust collecting equipment, and screw feeders, boot bucket elevator, etc., with motor and drive.
GYRATORY CRUSHER: Allis Chalmers 10-K, openings 24″ x 82″.
JAW CRUSHERS: Allis Chalmers 36″ x 48″ all steel, class 1-A, Traylor 15″ x 24″ with motor and V-belt drive. Other crushers 4 x 8″ to 48 x 60″.
REDUCTION CRUSHERS: Two Symons Cone 5½ ft. standard bowl with 200 H.P., 3 phase, 60 cycle, 2200 volt motors and control equipment. Nordberg 4¼ ft. Cone with 200 H.P. motor.
DRYERS, KILNS, COOLERS: Two 8′ x 125′ Kilns, one 9′ x 130′ Kiln, one 10′ x 200′ Kiln. One 104″ x 50′ Dryer, one 3′ x 27′ Dryer, one 90″ x 55′ Dryer, one 6′ x 50′ Cooler, one 5′ x 50′ and 5′ x 60′ Coolers.
CARS: 10 yd. capacity Phoenix, standard gauge, heavy duty, quarry type, automatic couplers.
OVERHEAD ELECTRIC TRAVELING CRANES: One 80 ft. span, 25 ton, 4 motor, 220/440 volt, A.C., trolley new 1955. One 56 ft. span, 3 motor, 110 volt, direct current. The above with or without runways and D.C. Generator.
MINE HOISTS: Nordberg double drum both clutched, 10′ x 10′, 1¼″ rope, 1200 FPM, forged steel drum shells, complete with all thoroughly modern electrics. One Allis Chalmers single drum 10′ x 10′, 1¼″ rope. Can furnish with either 700 or 400 H.P. motor, 3 phase, 60 cycle, 2200 volt. Offered with or without motor and controls. One single drum 84″ dia., 60″ face, 1⅝″ rope, 32,000 lbs. pull, 250 FPM, 150 H.P., 2200 volts, post brakes, Lilly control, dial indicator. Condition like new. Other hoists sizes 100 H.P. to 2500 H.P.
COMPRESSORS: 2—Chicago Pneumatic OCE, 1300 CFM @ 100# pressure, 20 x 12 x 14, 250 H.P., 257 RPM, with intercooler, aftercooler and control equipment.

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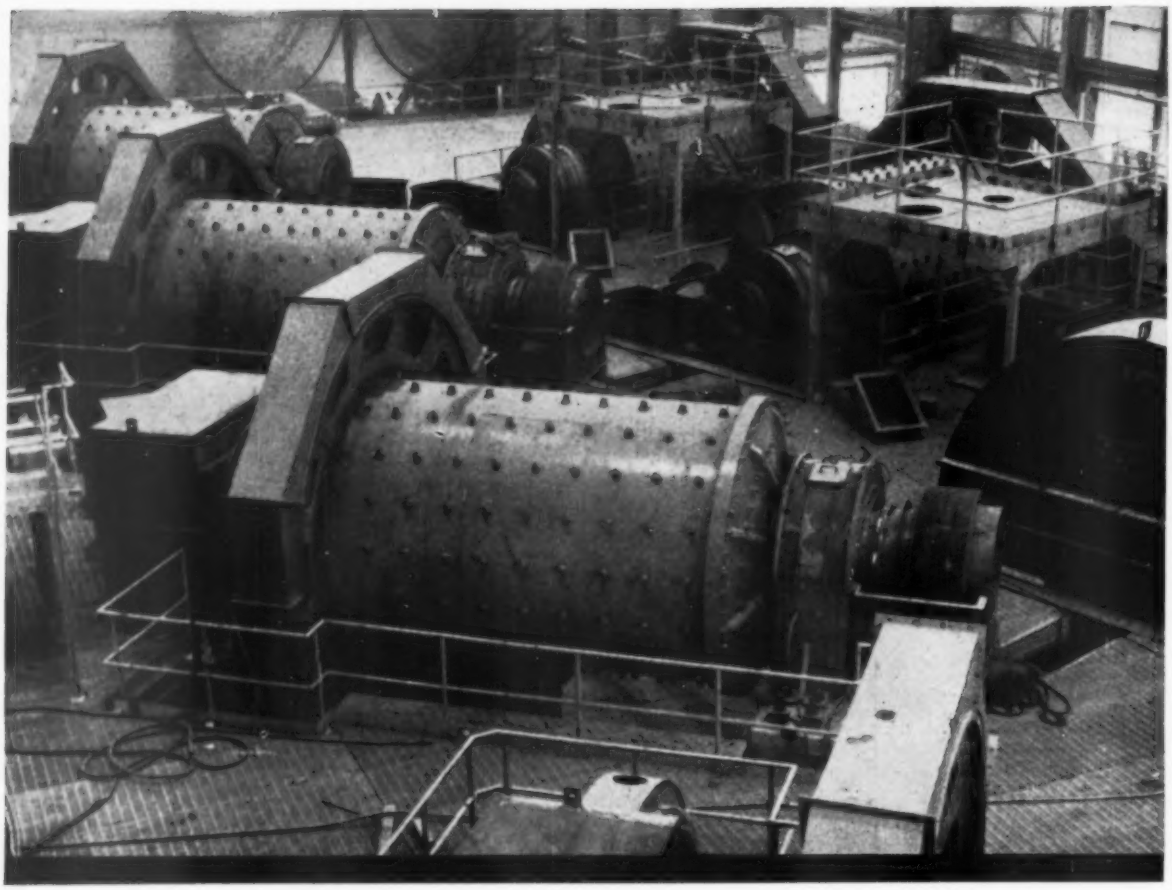

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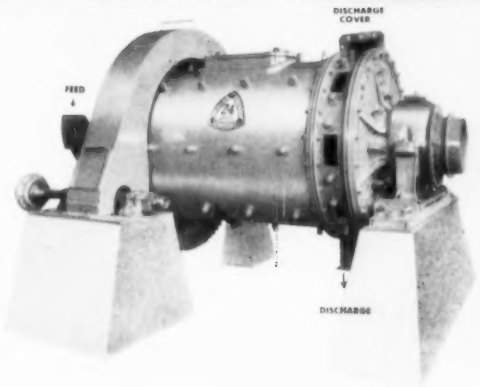

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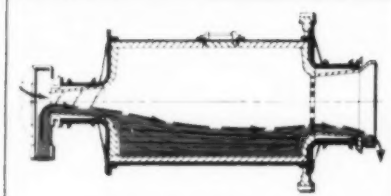
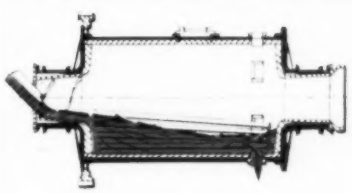


Medium or Large Trunnions with or without Grate Discharge



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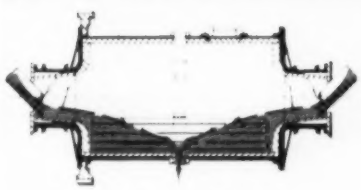

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